

# **PAMS Technical Documentation**

## **NSE-5 Series Transceivers**

## **Service Software Instructions**

## CONTENTS

Service Software .....	5
Hardware requirements for Windows 3.1x .....	5
Hardware requirements for Windows 95 .....	5
Software Environment of the Support Modules .....	5
Required Servicing Equipment .....	6
Test and tuning with covers off .....	6
Warranty transfer (phone to phone) .....	6
Audio test equipment (optional) .....	6
RF test and tuning equipment .....	7
Extra equipment (for added accuracy on RF tuning): .....	7
Energy Management Calibration .....	7
Infrared test equipment .....	7
Flash programming equipment .....	7
Equipment Setup .....	8
Installation .....	8
Mechanical Connections .....	8
Installing the Software on PC Hard Disk .....	9
First time installation of WinTesla: .....	9
Installation of NSE-5 support modules (WinTesla already installed): ..	10
Equipment Setup for Tuning a Phone without Removing Covers .....	11
Flash Concept for NSE-5 .....	12
Tuning With Covers Off – Using Test-frame JBS-19 .....	13
Common Properties of the User Interface .....	16
Login Dialog .....	16
Main Window .....	17
Menu .....	19
Product .....	19
Configure .....	20
Tuning .....	20
Testing .....	20
Software .....	21
Dealer .....	21
View .....	21
Help .....	22
Mouse Cursors .....	22
Reserved Keys .....	23
Short Cut Function Keys .....	23

Alt Hot Keys .....	23
Ctrl Hot Keys .....	23
Shift Hot Keys .....	23
Key Strokes .....	24
Help Functions .....	25
Dialog boxes .....	26
Common Dialog boxes .....	26
Custom Dialog boxes .....	28
Buttons .....	28
Reporting Status .....	29
NSE-5 Features .....	30
Product .....	30
New command .....	30
Open... command .....	30
Initialise... command .....	30
Normal Mode .....	30
Local Mode .....	31
Band command .....	32
GSM .....	32
PCN .....	32
Faultlog command .....	32
Activate Faultlog .....	32
Edit Faultlog .....	32
FastNAM command .....	33
Exit command .....	33
Tuning .....	33
General .....	33
RX Calibration... command .....	33
Tx Power... command .....	39
Tx I/Q... command .....	43
Energy Management Calibration... command .....	47
Display Contrast Adjustment... command .....	51
Testing .....	53
RF Controls... command .....	53
RSSI Reading... command .....	57
Self Tests... command .....	58
Supported Self Tests .....	60
ADC Readings... command .....	61

Audio... command .....	62
Vibrator.....command .....	64
User Interface... command .....	65
Call Simulation... command .....	66
Noise Sensitivity... command .....	67
IR Test... command .....	69
Software .....	70
Product Profile... command .....	70
Start Up Self–tests... command .....	71
Set Factory Values... command .....	72
Phone Identity... command .....	73
Warranty State... command .....	75
Production Data Edit... command .....	76
Flash Phone... command .....	78
Dealer .....	81
User Settings... command .....	81
Short Code Memory... command .....	82
SCM & User Settings... command .....	84
Restore User Defaults... command .....	85
Set UI/DEV Default Values... command .....	87
Flash PPM.....command .....	88
Operator Settings.....command .....	88
IWR Swap Command .....	89
View .....	90
Quick/RF Info... command .....	90
Phone Identity... command .....	92
Appendix 1, Vocabulary .....	93

## Service Software

To run the After Sales SW, a parallel port software protection device (PKD-1) has to be connected. TDF-4 box must be connected to PC for flashing purposes. The user can use PC-locals functions in modules for testing NSE-5 mobile stations (MS). The test functions send test messages from PC to MS and receive results and show them in the PC display. The messages can be sent via M2BUS or FBUS.

**Note1:** if this software is to be run on laptops, the power saving feature MUST be switched off. if this is not switched off you need to re-establish connection to the phone after power saving has been active.

### Hardware requirements for Windows 3.1x

The recommended minimum hardware standard to run Service Software is any computer which is 386 33 MHz or greater with at least 4 MB of memory and VGA type display (640 x 480). This assumes that only the WinTesla with After Sales Support Modules is active, i.e. other Windows packages are not running in the background.

### Hardware requirements for Windows 95

The recommended minimum hardware standard to run Service Software is any computer which has Pentium processor, memory 8 MB and meets HW requirements recommended by Microsoft.

### Software Environment of the Support Modules

The Service Software user interface is intended for the following environments: Microsoft Windows 3.1x and Windows 95 environment running in enhanced mode as well as Microsoft NT. Detailed information about Windows and application usage can be found from the Microsoft Windows Version 3.1 Users Guide chapter one (Windows Basics) and chapter two (Application Basics).

As an ordinary Windows application, the main idea in the user interface is that selections are made with menus, push buttons and shortcut keys. Selections can be done by using keyboard and/or mouse. There is always a status bar displayed at the bottom of the main window which contains information about current actions.

## Required Servicing Equipment

- Computer: At least IBM 80386 or compatible with one unused serial port (COM1 or COM2)<sup>\*)</sup>, one parallel port (LPT1), at least 20Meg of free hard disk, 3.5" floppy disk and 4 Meg of RAM.
- Operating System: Win 3.1 or later
- Display: minimum monochrome graphic display with 640x480 resolution
- Service software version for 3.5" disk (product code: 0774046)
- Service software for NSE-5 version for 3.5" disk (product code: 0774117)
- One of the following protection keys:–
  - Software protection key PKD-1 (product code: 0750018)
    - Software protection key PKD-1CS (product code: 075Y002 )
    - Software protection key PKD-1D (product code: 0750053)
    - Software protection key PKD-1NS (product code: 075Y001 )
  - RS 232 Serial Cable DSUB-9 female AX5-4 (product code: 0730090 )
  - Service MBUS Cable DAU-9P (product code: 0730109)
  - Service MBUS Cable DAU-9S (product code: 0730108)
  - Service cable SCH-5 (product code: 0730098)
  - Modular T-adapter (product code: 4626134)

***\*) Note:*** A number of PC's of an older generation use the Intel, National Semiconductor, or United Microelectronics IC 8250 as the serial port UART. This is a comparatively inefficient circuit for current purposes and does not necessarily support the M2BUS adapter at 9600 baud. The newer UART's NS16450 and NS16550AF of National Semiconductor offer solutions for these problems.

### Test and tuning with covers off

- DC Cable PCS-1 (product code: 0730012)

Either:

- Module Jig JBS-19 (product code: 0770098)
- SIM-Card holder CAH-1 (product code: 0770112)

Or:

- Light Module Jig JBT-1 (product code: 0770109)

### Warranty transfer (phone to phone)

- Warranty cable SCH-6 (product code: 0730099)

### Audio test equipment (optional)

- Audio cable ADS-1 (product code: 0730011)
- Service Audio Box JBA-4 (product code: 0770094)
- Function Generator (Sine-wave, 0–500mV, 1kHz)
- Oscilloscope
- Multimeter
- Headset HDC-9 (product code: 0694093)

**RF test and tuning equipment**

- GSM/PCN Signal generator and tester (e.g. Rhode & Schwartz CMD 55)
- External Antenna Cable XRC-1B (product code: 0730128)

**Extra equipment (for added accuracy on RF tuning):**

- RF generator
- Pulse power meter
- GSM/PCN Spectrum analyser
- Attenuator and branching unit

**Energy Management Calibration**

- DC power supply that are capable of delivering 10.5 Volt DC
- Service battery BBD-3 (product code: 0775071)
- DC Charger calibration cable SCB-3 (product code: 0730114)

**Infrared test equipment**

– Infrared test cable JLP-1 (product code: 0750079)

One of the following Travel chargers

- Travel charger ACH-6E (Euro) (product code: 0270381)
- Travel charger ACH-6U (USA/Japan) (product code: 0270382)
- Travel charger ACH-6X (UK) (product code: 0270380)
- Combox TDC-4 (product code: 0630119)

**Flash programming equipment**

Either:

- Point Of Sale flash adapter FLS-1 (product code: 075T000)

Or (the following can also be used instead of Combox TDC-4):

- Flash security box TDF-4 (product code: 0770106)
- Flash loading adapter FLA-5 (product code: 00800178)
- Flash Prommer sales package FPS-4S (product code: 0085095)
- Service battery BBD-3 (product code: 0775071)
- Travel charger ACH-6E (Euro) (product code: 0270381)

One of the following Travel chargers

- Travel charger ACH-6U (USA/Japan) (product code: 0270382)
- Travel charger ACH-6X (UK) (product code: 0270380)
- DC power cable PCC-1B (product code: 0770053)

## Equipment Setup

***Caution:*** Make sure that you have switched off the PC and the printer before making connections!

***Caution:*** Do not connect the PKD-1 key to the serial port. You may damage your PKD-1!

Attach the protection key PKD-1 to parallel port one (25-pin female D-connector) of the PC. When connecting the PKD-1 to the parallel port be sure that you insert the PC end of the PKD-1 to the PC (male side). If you use a printer on parallel port one, place the PKD-1 between the PC and your printer cable.

Next connect the M2BUS service cable, DAU-9P, to the serial port (RS-232) of the computer. Attach one end of the service cable to the PC serial port and the other end to the service box, JBA-4. For servicing the phone with the covers in place the service box should always be used. When the phone covers are removed the jigs should be used.

For audio measurements connect the audio cable, ADS-1, as follows:

- EAR line to AF INPUT of test equipment
- MIC line to MOD GEN OUTPUT of test equipment

## Installation

### Mechanical Connections

The software controls the phone via a separate adapter connected to the serial port of the PC, and to the telephone's M2BUS (DAU-9P).

Attach the dongle PKD-1 to the parallel port 1 (25-pin female D-connector) of the PC. When connecting PKD-1 to the parallel port, be sure that you insert the computer side of the PKD-1 to the PC (male side). If you use a printer on parallel port 1, install the PKD-1 between the PC and your printer cable.

The PKD-1 should not affect devices working with it. If some errors occur (errors in printing are possible) please try printing without the PKD-1. If printing is OK without the PKD-1 please contact your dealer. We will offer you a new PKD-1 in exchange for your old one.

## Installing the Software on PC Hard Disk

The program is delivered on a diskette and is copy protected with a dongle PKD-1. It must be present in parallel port when using Service software.

The program must be installed on the hard disk before use.

Keep the original diskette safe to enable upgrading of the program !

If you plan to use PCL Start service software, you must install it before installing Service software, see PCL Start installation instructions.

---

### First time installation of WinTesla:

Do the following to make a complete WinTesla installation with support for NSE-5:

Insert the WinTesla software diskette into the floppy drive on your computer (i.e. Drive A:)

#### **For Windows 3.1 and 3.11:**

start Windows, type `win <Enter>`

Open the File manager, open Main window and start File manager.

Select the floppy drive and:

#### **For Windows 95 and NT:**

Open Microsoft Explorer,Select `Start –Programs – Explorer`

Select the floppy drive and:

Start installation ,double-click the `wt_inst.exe` file.

Follow the instructions on the screen. Write down the directory where WinTesla is installed on your hard disk.

When installation has finished remove the WinTesla software disk from your floppy drive.

Insert the Dongle driver diskette into your floppy drive.

Select the floppy drive and:

#### **For Windows 3.1 and 3.11:**

Start installation, double-click the `dk2wn16.exe` file.

#### **For Windows 95 and NT:**

Start installation,double-click the `dk2wn32.exe` file.

Follow the instructions on the screen.

When installation has finished remove the dongle driver software disk from your floppy drive.

Continue with the following installation.

**Installation of NSE-5 support modules (WinTesla already installed):**

To install the new Service software program, follow the steps below:

Insert the new Service software diskette  
into the floppy drive on of your computer (i.e. Drive A:)

***For Windows 3.1 and 3.11:***

start Windows, type *win <Enter>* and open the File manager.  
Open Main window and start File Manager, select the floppy  
drive

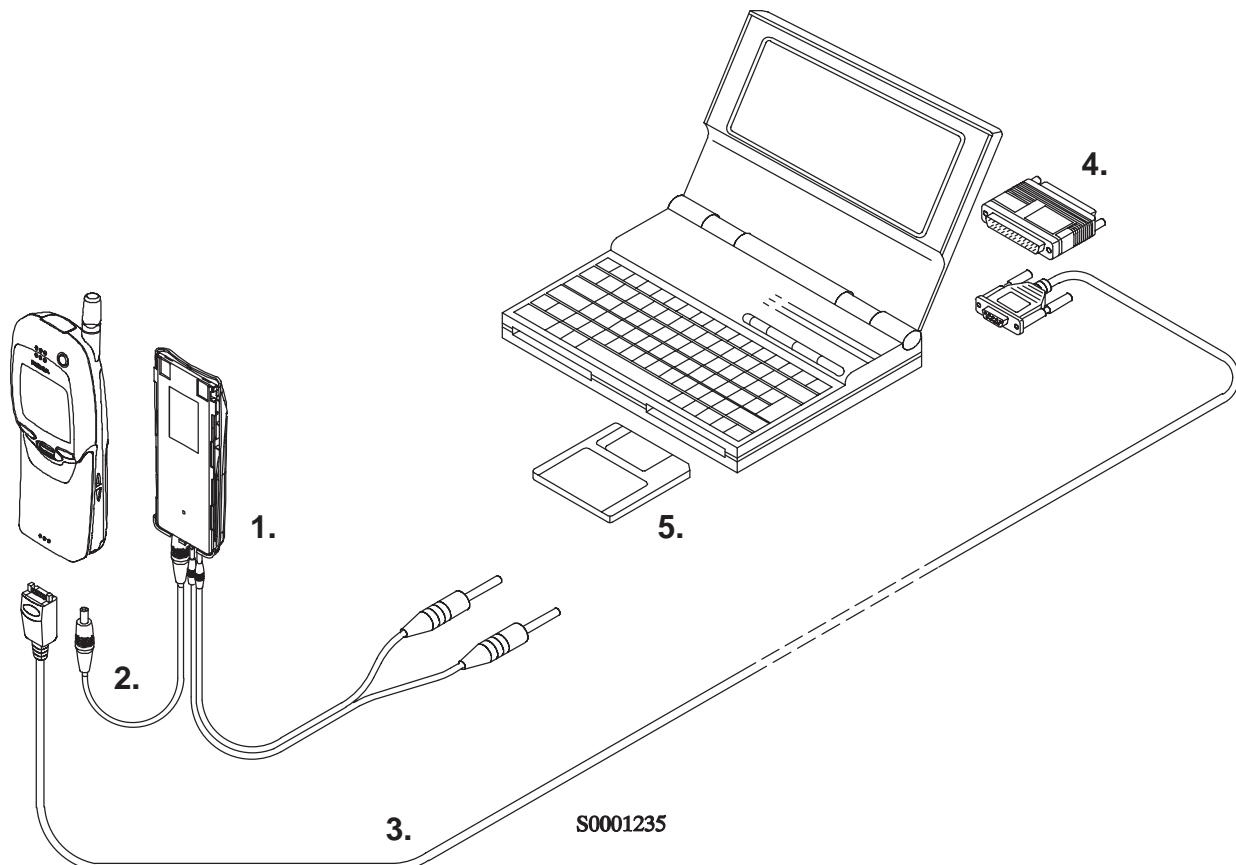
***For Windows 95 and NT:***

Open Microsoft Explorer, select *Start –Programs– Explorer*  
select the floppy drive.

Start installation, double-click the *asinstal.exe* file.

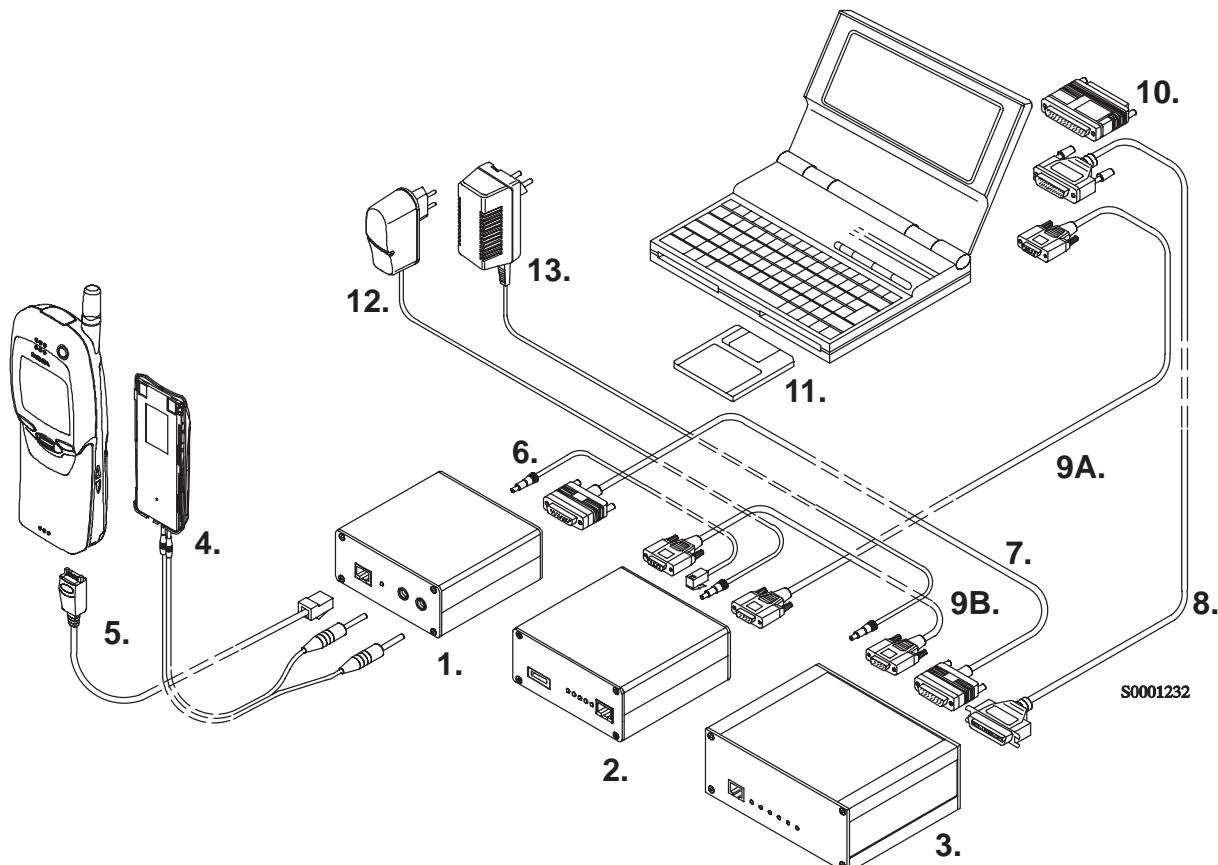
Follow the instructions on the screen.

## Equipment Setup for Tuning a Phone without Removing Covers



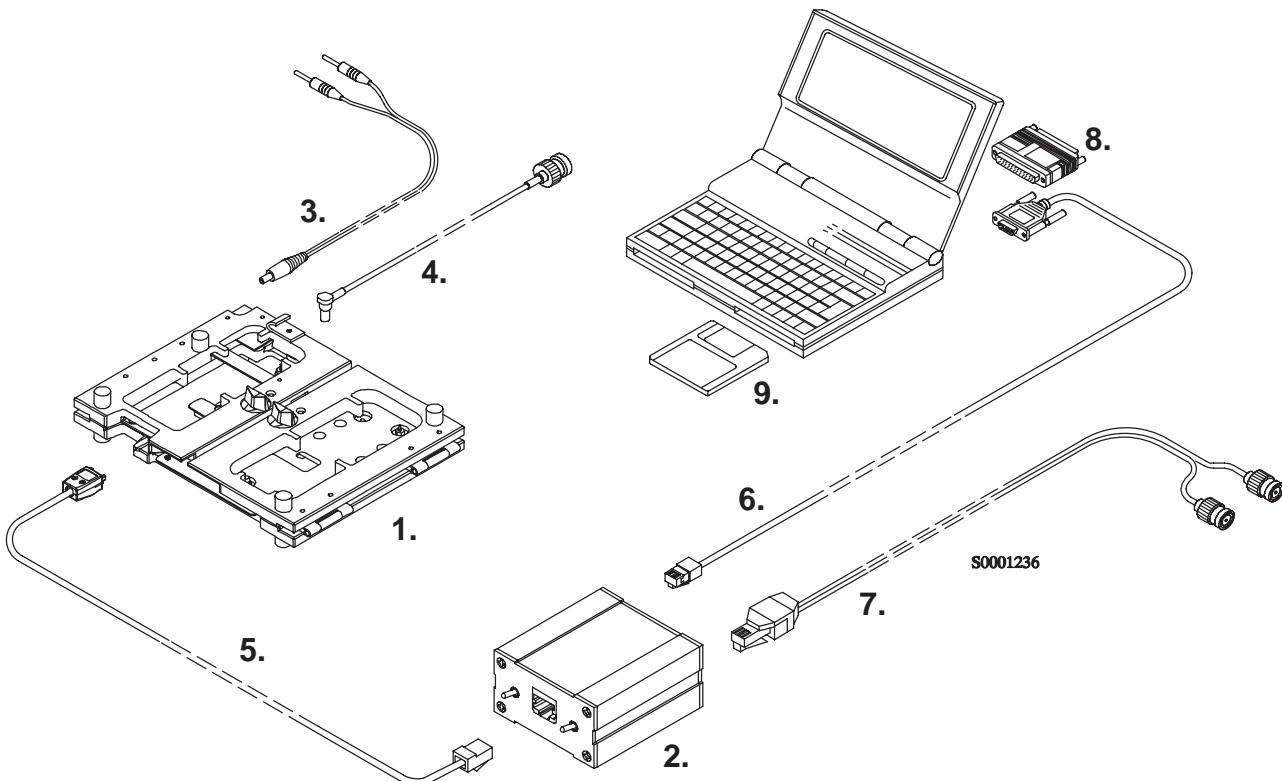
Item:	Service accessory:	Product code:
1	Service Battery BBD-3	0775071
2	DC Cable SCB-3	0730114
3	Service MBUS Cable DAU-9P	0730109
4	Software protection key PKD-1	0750018
5	Service SW diskette 3.5"	0774080

## Flash Concept for NSE-5



Item:	Service accessory:	Product code:
1	Flash Loading Adapter FLA-5	0080178
2	Flash Security Box TDF-4	0770106
3	Prommer FPS-4S	0085095
4	Service Battery BBD-3	0775071
5	Service Cable SCH-5	0730098
6	DC Cable PCC-1B	0730053
7	D15 – D15 Cable AXS-5 (Included in FLA-5 sales pack)	0730091
8	Printer Cable (Included in FPS-4 sales pack)	0730029
9A	D9 – D9 Cable AXS-4 (Included in FPS-4 sales pack)	0730090
9B	D9 – D9 Cable AXS-4	0730090
10	Software protection key PKD-1	0750018
11	Service SW diskette 3.5"	0774080
12	Travel Charger ACH-6E (Euro) Travel Charger ACH-6U (USA/Japan) Travel Charger ACH-6X (UK)	0270381 0270382 0270380
13	AC Charger ACL-3E (Included in FPS-4 sales pack)	0680015

## Tuning With Covers Off – Using Test-frame JBS-19

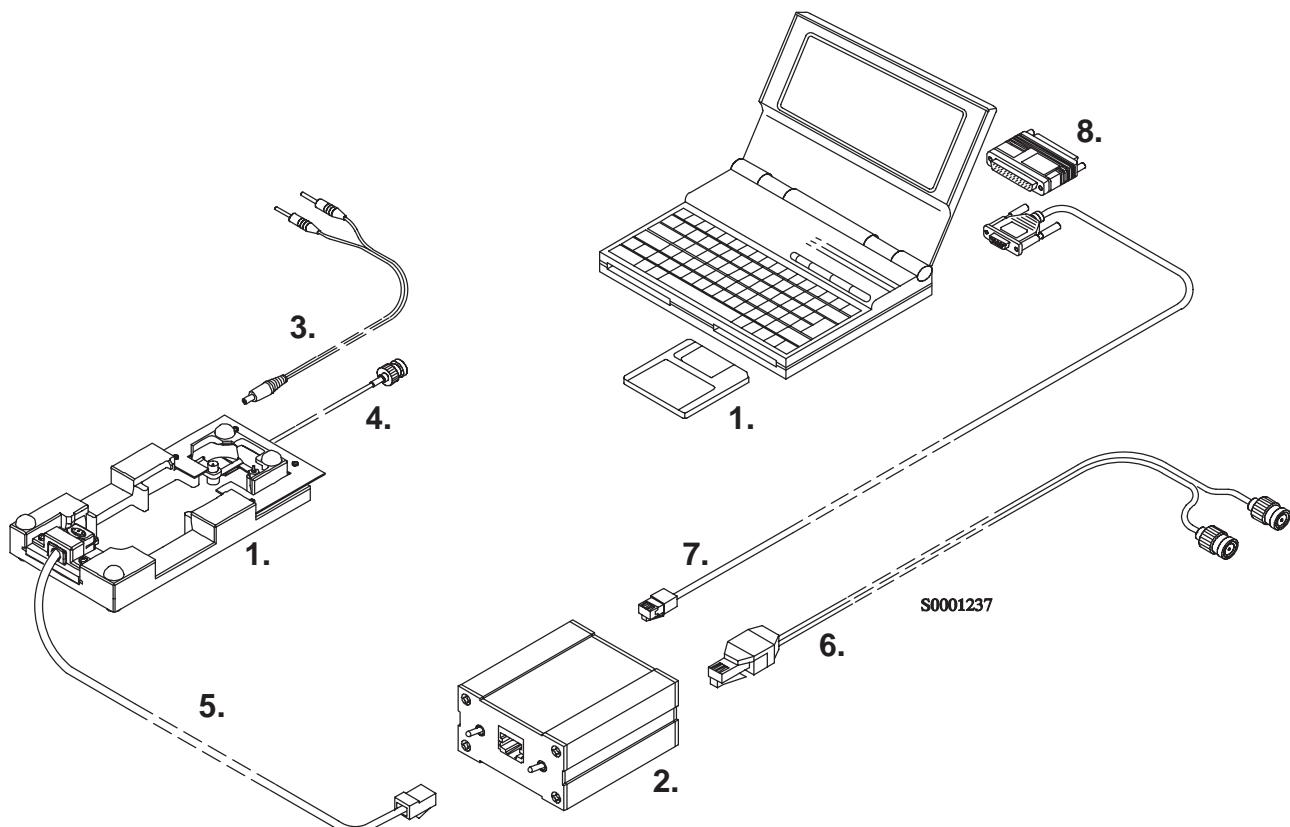


Item:	Service accessory:	Product code:
1	Module Jig JBS-19 *	0770098
2	Service Audio Box JBA-4 **	0770094
3	DC Cable PCS-1	0730012
4	External Antenna Cable XRC-1B	0730128
5	Service Cable SCH-5 **	0730098
6	Service MBUS Cable DAU-9S **	0730108
7	Audio Cable ADS-1	0730011
8	Software Protection Key PKD-1	0750018
9	Service SW diskette 3.5"	0774080

\* The nominal operating voltage for JBS-19 is 3.6 V.  
The supply voltage for JBS-19 must never exceed 5.0 V

\*\* SCH-5, JBA-4, and DAU-9S can be replaced with DAU-9P

## Tuning With Covers Off – using Light Jig JBT-1

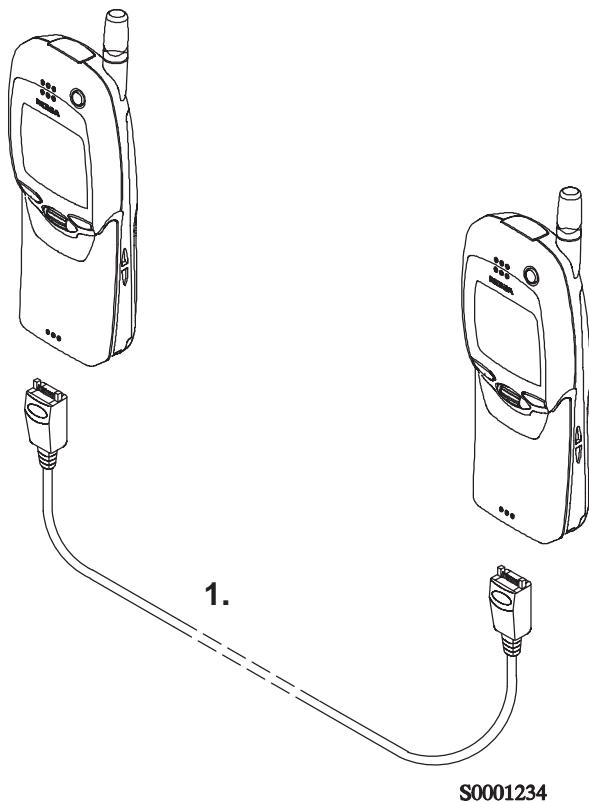


Item:	Service accessory:	Product code:
1	Light Module Jig JBT-1 *	0770109
2	Service Audio Box JBA-4 **	0770094
3	DC Cable PCS-1	0730012
4	External Antenna Cable XRC-1B	0730128
5	Service Cable SCH-5 **	0730098
6	Audio Cable ADS-1	0730011
7	Service MBUS Cable DAU-9S **	0730108
8	Software Protection Key PKD-1	0750018
9	Service SW diskette 3.5"	0774080

\* The nominal operating voltage for JBT-1 is 3.6 V.  
The supply voltage for JBT-1 must never exceed 5.0 V

\*\* SCH-5, JBA-4, and DAU-9S can be replaced with DAU-9P

## Warranty Transfer



Item:	Service accessory:	Product code:
1	Warranty Cable SCH-6	0730099

## Common Properties of the User Interface

When the Service Software application is invoked, the **Login** dialog box will be displayed on the screen.

The User Interface can be mouse driven or used without the use of a mouse.

### Login Dialog

When the Service Software application is invoked, by checking on the Service Software icon, the **Login** dialog box will be displayed on the screen.



#### Nokia logo and application name bitmap (-)

Displays Nokia logo and name of the application.

#### Application version static text (-)

Contains the name and version of the application.

#### Copyright notice static text (-)

Copyright is informed as: "**Nokia Mobile Phones (c) 1996. All Rights Reserved**".

#### Login Box edit box (-)

The user Login ID edit box, where the user enters his faultlog user name. (See Faultlog User Guide)

**OK button (default key)**

The user name is stored in memory and the dialog box is closed. When the dialog box is closed, the application starts.

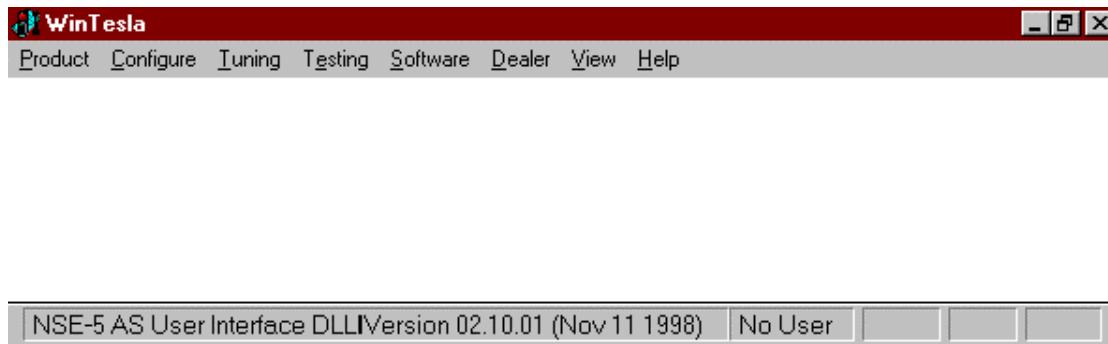
**Cancel button (ESC)**

The Dialog box is closed and application is started, but the Faultlog feature is disabled.

**Help button (F1)**

Activates the Windows Help application and displays context sensitive Help.

## Main Window



### Title bar

The *title bar* is located at the top of the window.

A title bar contains the following elements:

- Application Control-menu button
- Maximise button
- Minimise button
- Name of the application
- Restore button

The properties of these elements and their usage is described in Ref 3– Microsoft Windows Version 3.1 Users Guide chapter one (Windows Basics) and chapter two (Application Basics).

### Menu bar

The *menu bar* is below the title bar and contains all available menu selections. The menu bar is a dynamic element and is dependent on the dongle type fitted, and whether a phone is connected.

Underlined characters in menu names and options indicates that the menu selection can be done by pressing *Alt+ underlined character*. Options can also be selected by activating menu bar with *Alt-* key ( or *F10* key ) and using arrow-keys to highlight the desired menu. In that case, selection is done by pressing *Enter*.

Menus can also be selected by using the mouse as described in Ref 3—Microsoft Windows Version 3.1 Users Guide

### Status bar

The *status bar* is displayed at the bottom of the Service Software main window. The status bar contains information about the latest detected/selected phone type the software version of the product support modules, ongoing events, and contain a set of status indicators.

The left area of the status bar describes the latest detected/selected phone type, and gives the version of the product support modules.

The status bar texts are explained in detail in the description of each command.

The right areas of the status bar indicate which of the following keys are latched down:

Indicator	Description
USER	Entered Login ID.
CAP	The Caps Lock key is latched down.
NUM	The Num Lock key is latched down.
SCRL	The Scroll Lock key is latched down.

## Menu

The Service Software package will have two menu bar configurations. The first, is an abbreviated version that contains the minimum number of menus that allows package configurations when a phone is NOT connected. The second is described below:

The menu bar contains the following menus for the Service Software package when a phone is connected:

- Product\*
- Configure\*
- Tuning
- Testing
- Software
- Dealer
- View
- Help\*

\* – always displayed, even if no phone is connected.

A menu is broken down into sections that are indicated with menu separators. Each sections identifies a logical difference from itself and other sections, i.e. between transmitter and receiver.

The menu lists will use the Microsoft [...] symbol after an item name to indicate that selecting that item will NOT initiate an operation immediately, i.e. a dialog box will be displayed for the user to select options or type in data and press the OK button before the operation is performed.

### Product

The Product menu contains the following menu items:

- New (Ctrl+R)
- Open...
- Close
- Initialize
  - Normal Mode (F5)
  - Local Mode (Shift+F5)
- Band
  - GSM
  - PCN
- Faultlog
  - Activate Faultlog...(F9)
  - FastNAM – F8 (Disabled)..
- Exit (Alt+F4)



## Configure

The Configure menu contains the following items:

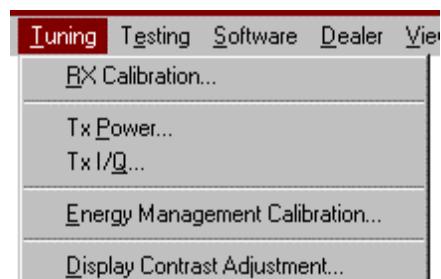
- Options...
- Buses
- Directories...
- Faultlog...
- FastNAM                   (Disabled)
- GPIB Instruments (Disabled)
- MPWS Swap



## Tuning

The Tuning menu contains the following menu sections:

- RX Calibration...
- Tx Power...
- Tx I/Q...
- Energy Management Calibration...
- Display Contrast Adjustment...



## Testing

The Testing menu contains the following sections:

- RF Controls...
- RSSI Reading ...
- Self Tests
- ADC Readings
- Audio
  - Internal
- Vibrator
- User Interface
- Call Simulation
- Noise Sensitivity...
- IR Test



## Software

The Software menu contains the following menu sections:

- Product Profile...
- Start Up Self-tests...
- Set Factory Values
- Phone Identity...
- Warranty State..
- Production Data Edit...
- Flash Phone...



## Dealer

The Dealer menu contains the following menu sections:

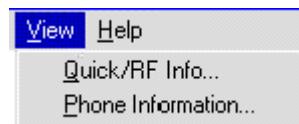
- User Settings...
- Short Code Memory...
- SCM & User settings ...
- Restore User Defaults...
- Set UI/DEV Default Values ...
- Flash PPM
- Operator Settings..



## View

The View menu contains the following sections:

- Quick/RF Info...
- Phone Information...



## **Help**

The Help menu contains the following menu items:



- Index
- General Help (F1)
- Using Help
- About WinTesla
- About AS Locals

## **Mouse Cursors**

The standards Windows pointer is used as the mouse cursor.

During time consuming tasks e.g. communication to phone, an hour glass is shown informing the user that a task is in progress. The application uses the hour glass cursor to inform user that the application has taken the control and any actions from user will be ignored.

When a function is initiated, the hour glass will be displayed and when the function has finished the mouse pointer will return to normal.

## Reserved Keys

The following Hot keys and Short Cut keys are reserved either as Microsoft standard keys or as part of the Common Look and Feel.

### Short Cut Function Keys

Key	Description	Defined by
F1	Context Sensitive Help	Microsoft
F5	Normal Mode	NMP
Shift+F5	Local Mode	NMP
F8	FastNAM (disabled)	NMP
F9	Activate Faultlog	NMP
F10	Goto Menu Bar	Microsoft
Ctrl+F4	Close Active Window	Microsoft

### Alt Hot Keys

Key	Description	Defined by
Alt+F4	Exit Active Application	Microsoft
Alt+H	Help	Microsoft

### Ctrl Hot Keys

Key	Description	Defined by
Ctrl+N	File – <u>New</u>	Microsoft
Ctrl+O	File – <u>Open</u>	Microsoft
Ctrl+P	File – <u>Print</u>	Microsoft
Ctrl+R	Product – <u>New</u>	NMP

### Shift Hot Keys

Key	Description	Defined by
Shift+F5	Local Mode	NMP

**Key Strokes**

Key	Description	Defined by
Alt+P	<u>Product</u> Menu	NMP
Alt+P,N	<u>New</u>	NMP
Alt+P,O	<u>Open</u>	NMP
Alt+P,C	<u>Close</u>	NMP
Alt+P,I	<u>Initialise</u> Pop-up	NMP
Alt+P,I,N	<u>Normal</u> Mode	NMP
Alt+P,I,L	<u>Local</u> Mode	NMP
Alt+P,B	<u>Band</u> Pop-up	NMP
Alt+P,B,G	<u>GSM</u>	NMP
Alt+P,B,P	<u>PCN</u>	NMP
Alt+P,F	<u>Faultlog</u> Pop-up	NMP
Alt+P,F,A	<u>Activate</u> Faultlog	NMP
Alt+P,F,E	<u>Edit</u> Faultlog	NMP
Alt+P,N	<u>Fast</u> <u>NAM</u> (disabled)	NMP
Alt+P,X	<u>Exit</u> Application	NMP
Alt+C	<u>Configure</u>	NMP
Alt+C,O	<u>Option</u>	NMP
Alt+C,B	<u>Buses</u>	NMP
Alt+C,D	<u>Directories</u>	NMP
Alt+C,F	<u>Faultlog</u>	NMP
Alt+C,N	<u>Fast</u> <u>NAM</u> (disabled)	NMP
Alt+C,G	<u>GPIB</u> instruments (disabled)	NMP
Alt+C,M	<u>MPWS</u> Swap	NMP
Alt+T	<u>Tuning</u> Menu	NMP
Alt+T,R	<u>RX</u> Calibration	NMP
Alt+T,P	<u>Tx</u> Power	NMP
Alt+T,Q	<u>Tx</u> I/Q	NMP
Alt+T,E	<u>Energy</u> Management Calibration	NMP
Alt+T,D	<u>Display</u> Contrast Adjustment	NMP
Alt+E	<u>Testing</u> Menu	NMP
Alt+E,R	<u>RF</u> Controls	NMP
Alt+E,E	<u>RSSI</u> Reading	NMP
Alt+E,S	<u>Self</u> Tests	NMP
Alt+E,A	<u>ADC</u> Readings	NMP
Alt+E,U	<u>Audio</u> Pop-up	NMP
Alt+E,U,I	<u>Audio</u> Internal	NMP
Alt+E,V	<u>Vibrator</u>	NMP
Alt+E,T	<u>User</u> Interface	NMP
Alt+E,C	<u>Call</u> Simulation	NMP
Alt+E,N	<u>Noise</u> Sensitivity	NMP
Alt+E,I	<u>IR</u> Test	NMP
Alt+S	<u>Software</u> Menu	NMP

Alt+S,P	<u>Product Profile</u>	NMP
Alt+S,S	<u>Start-up Self Tests</u>	NMP
Alt+S,V	<u>Set Default Values</u>	NMP
Alt+S,I	<u>Phone Identity</u>	NMP
Alt+S,W	<u>Warranty state</u>	NMP
Alt+S,D	<u>Production Data Edit</u>	NMP
Alt+S,F	<u>Flash Phone</u>	NMP
Alt+D	<u>Dealer Menu</u>	NMP
Alt+D,U	<u>User Settings</u>	NMP
Alt+D,S	<u>Short Code Memory</u>	NMP
Alt+D,M	<u>SCM &amp; User Settings</u>	NMP
Alt+D,R	<u>Restore User Defaults</u>	NMP
Alt+D,V	<u>Set UI/DEV Default Values</u>	NMP
Alt+D,F	<u>Flash PPM</u>	NMP
Alt+D,O	<u>Operator Settings</u>	NMP
Alt+D,I	<u>IWR Swap</u>	NMP
Alt+V	<u>View Menu</u>	NMP
Alt+V,Q	<u>Quick/RF Info</u>	NMP
Alt+V,P	<u>Phone Information</u>	NMP
Alt+H	<u>Help Menu</u>	Microsoft
Alt+H,I	<u>Index</u>	Microsoft
Alt+H,G	<u>General Help</u>	Microsoft
Alt+H,U	<u>Using Help</u>	Microsoft
Alt+H,A	<u>About WinTesla</u>	NMP
Alt+H,B	<u>About AS Locals</u>	NMP

## Help Functions

The Help User Interface is the standard Windows help tool called WinHelp.

The context sensitive help is activated with **F1**-key. Help contains also Using Help which gives a list of help indexes. Refer to the Windows manual for detailed description on the Windows Help.

## Dialog boxes

The Service Software application uses many different dialog boxes. Dialog boxes are used to display data and prompt the user for input.

Dialog boxes are opened from menus or with shortcut keys. Dialog boxes have different properties but some features are common.

Most service dialog boxes are modal, that is, the user will not be able to start another operation without first closing the present dialog box.

All dialog boxes contain the following entities:

- Help button
- Title bar
- At least one button other than Help
- Application Close—menu Button

## Common Dialog boxes

This section describes the common dialog boxes used in the Service Software package, and the context in which they are used.

### Warning and Exclamation Message Box

When the user has made an illegal selection, a *Warning and Exclamation Message Box* dialog will be opened and message text is displayed. The size of the dialog box may vary. This box is recognised by the ! icon.



The dialog box also contains an **OK** button and sometimes a **Cancel** button.

**OK** button (default key):

Acknowledges Warning / Exclamation and continues. The dialog box is closed after selection.

**Cancel** button:

Abandons the function and closes the dialog box

### Information Message Box

When the program has some information for the user, an Information Message Box dialog will be opened and a text message displayed. the size of the dialog box may vary. This box is recognised by the **i** icon.



The dialog box also contains an **OK** button.

- |                                 |  |
|---------------------------------|--|
| <b>OK</b> button (default key): | Acknowledges information and closes the dialog box |
|---------------------------------|--|

### Query Message Box

Confirmations and questions are asked in a *query message box*. A query dialog box is recognized by the **?**-icon.



The dialog box contains a Yes button, a No button, and a Help button.

- |   |                                   |
|---|-----------------------------------|
| <b>Yes</b> button (Alt+Y or Y) (default key): | Accepts confirmation or question. |
|---|-----------------------------------|

- |                                |                                  |
|--------------------------------|----------------------------------|
| <b>No</b> button (Alt+N or N): | Denies confirmation or question. |
|--------------------------------|----------------------------------|

- |                             |  |
|-----------------------------|--|
| <b>Help</b> button (Alt+H): | Opens context sensitive help as F1-key does. |
|-----------------------------|--|

The buttons may also be OK and Cancel.

### Error Message Box

Error message dialog boxes use the Error-icon. When a "Error"-dialog box is shown, the current operation is terminated.

The dialog box has a description about the failed operation and reason. Pressing F1 (Help) application opens the appropriate help topic that gives information about recommended actions.



The dialog box also contains an OK button and sometimes a Help button.

- |                                 |   |
|---------------------------------|---|
| <b>OK</b> button (default key): | Acknowledges displayed information and terminate current operation. The dialog box is closed after selection. |
|---------------------------------|---|

- |                             |   |
|-----------------------------|---|
| <b>Help</b> button (Alt+H): | Open context sensitive help as F1-key does. |
|-----------------------------|---|

## Custom Dialog boxes

All custom dialog boxes will contain the predefined buttons as defined below in the section – *Buttons*.

The buttons are mainly positioned down the right-hand side of the dialog boxes. The default action will be **OK**, except where that default action could result in an irretrievable failure.

All tuning dialogs that contain tuning results, will display the old tuned data read from the phone before the tuning was performed, as well as the newly tuned data.

List boxes will be used to display lists of data, such as tuning data, test results etc.

The use of radio buttons defines the number of possible choices available to the user.

## Buttons

All buttons are of the Microsoft style.

In general, the default button is the action button, the Close button or the Yes button, but this will depend on the context of the dialog box that the button is associated with.

### (action) button:

Accepts and validates entered settings and values and closes the dialog. If the values have not been changed, then no action will be taken. The status bar will reflect the status. The user is only queried, if the settings or values accepted will over-write data that CAN NOT be reproduced.

A greyed **action** button indicates that settings selected by the user are not acceptable.

### Close button:

Closes the current dialog box. Does not send or store anything and closes the dialog. The Close button is only used for dialogs that do not set or change any data.

### Cancel button (Esc):

Cancel operation. Does not send or store anything and closes the dialog box.

A greyed **Cancel** button indicates that it is not possible to quit from this dialog box.

### Yes button (ALT+Y or Y):

Replies Yes to a question asked of the user.

**No button (ALT+N or N):**

Replies No to a question asked of the user.

**Help button (ALT+H):**

Opens context sensitive help as F1-key does.

## Reporting Status

The status bar is used to report the present status to the user. When a feature is initiated, the status bar will be updated with a brief description of the function. The status bar will also be updated at key points in a time consuming function.

If an error is to be reported to the user, it is displayed in the status bar as well as displayed in a common error dialog box. This will mean the user is not delayed from progressing on to the next operation unless an error occurs, in which case, the user will have to acknowledge the error by pressing the OK button.

## NSE-5 Features

### Product

#### New command

Activation	Status Bar Text
Alt, P, N	Scanning for product...
Ctrl+R	
If phone is changed (with same phone type only serial number is changed) phone will be initialised to normal mode. If phone is changed to different phone type the current DLLs are unloaded and new ones are loaded for that phone.	
If the Quick/RF Info view is open, window will be automatically updated. If Phone Information view is open, it will be automatically updated.	

#### Open... command

Activation	Status Bar Text
Alt, P, O	Changing product support modules
Phone is set to normal mode.	

#### Initialise... command

Activation	Status Bar Text
Alt, P, I	
Opens a submenu	

#### Normal Mode

Activation	Status Bar Text
Alt, P, N	Initialising normal mode...,
F5	
When normal mode has been activated or program has been started, self-test results will be asked from MCU. If any fault was found in the tests, an error message is shown. If normal mode has been set successfully (no self test error has been found), and paging listening has been started, the used AFC value is requested from MS. Initialisation routine checks phone's cellular type and if unsupported phone is detected, application unloads the DLLs.	

The After Sales SW sets automatically the MS state to local mode when needed. If phone identification view is open, window will be automatically updated. Also if RF Information Window is open it will be updated to quick info view.

When the user selects any of the following items, the MS-state is automatically set to normal:

<u>T</u> esting	<u>V</u> ibrator
<u>D</u> ealer	Set UI/DEV Default <u>V</u> alues

### Local Mode

Activation	Status Bar Text
Alt, P, L	Initialising local mode....;
Shift+F5	

Selection will change the MS-state to local. When the user selects any of the following items the MS-state is automatically set to local:

<u>T</u> uning	<u>R</u> X Calibration
<u>T</u> uning	<u>T</u> x <u>P</u> ower
<u>T</u> uning	<u>T</u> x <u>I/Q</u>
<u>T</u> uning	<u>E</u> nergy Management Calibration
<u>T</u> esting	<u>R</u> F Controls
<u>T</u> esting	<u>R</u> SSI <u>R</u> eading
<u>T</u> esting	<u>S</u> elf Tests
<u>T</u> esting	<u>A</u> udio <u>I</u> nternal
<u>T</u> esting	<u>V</u> ibrator
<u>T</u> esting	<u>C</u> all Simulation
<u>T</u> esting	<u>N</u> oise <u>S</u> ensitivity
<u>S</u> oftware	<u>W</u> arranty State
<u>D</u> ealer	<u>U</u> ser Settings
<u>D</u> ealer	<u>S</u> hort Code Memory
<u>D</u> ealer	<u>Restore User Defaults</u>

The After Sales SW sets automatically the MS state to local mode when needed.

Also if quick info view is open it will be updated to RF Information view.

**Band command**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, B

Opens a submenu

**GSM**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, B, G

Selects the GSM band on the MS

**PCN**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, B, P

Selects the PCN band on the MS

**Faultlog command**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, F

Opens a submenu. Only enabled when a user has logged in.

**Activate Faultlog**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, F, A

F9

Activates the faultlog. Only enabled when a user has logged in.

**Edit Faultlog**

Activation	Status Bar Text
------------	-----------------

---

Alt, P, F, A

Allows user to edit faultlog entries. Only enabled when a user has logged in.

**FastNAM command**

Activation	Status Bar Text
Alt, P, N	
F8	
This menu is only enabled when FastNAM functionality is included in WinTesla.	

**Exit command**

Activation	Status Bar Text
Alt, P, X	
Exits the WinTesla application.	

**Tuning****General**

All tuning operations of the NSE-5 are carried out using the service software. The service software turns the phone into the local-mode, in which the phone can be outwardly controlled via the MBUS interface.

Tuning is based on the software communicating with the D/A and A/D converters of the phone. In some instances the phone processor will also calculate the required correction parameter.

The tuning values of the phone reside in the emulated EEPROM. The contents of the emulated EEPROM can be read by the service software and saved as a file.

This is advisable when there is need to retain that information, e.g. in view of replacement of the circuit. The program also enables writing the default parameters on the emulated EEPROM, in which case all tuning steps should be carried out.

**RX Calibration... command**

A GSM/PCN signal generator and an antenna cable is needed for the calibration. Before starting the RX Calibration the active band must be set to the GSM band.

**Note:** After the GSM calibration is performed it is important that the PCN calibration is performed immediately afterwards.

Activation	Status Bar Text
Alt, T,R	Initialising local mode...;
Starts RX calibration.	

The next automatic selections are made when this tuning function is activated:

- Phone is set to local mode
- Update RF information window

The calibration is started automatically when RX calibration is entered.  
The calibration is done in eleven steps:

User is requested to put signal generator to high input level  
(read from .INI file).



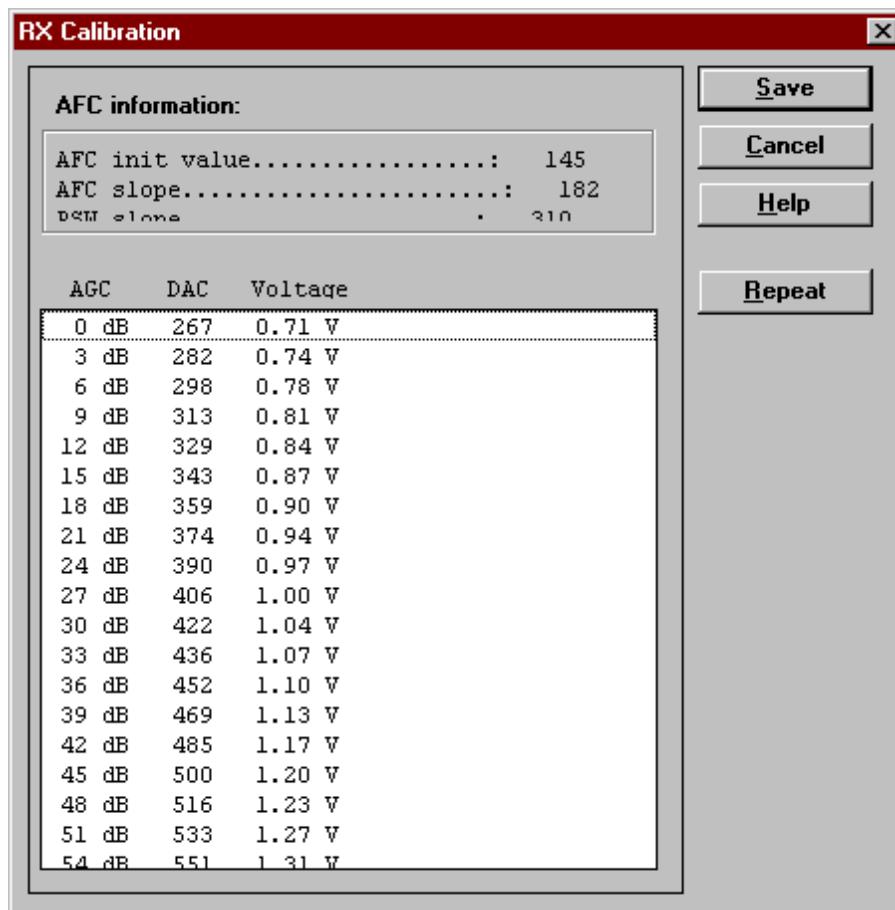
When the user acknowledges by pressing OK, the calibration with high input level is executed.

User is requested to put signal generator to low input level  
(read from .INI file).



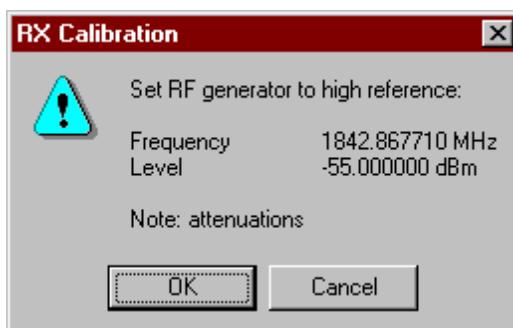
When the user acknowledges by pressing OK, the calibration with low input level is executed.

The **RX Calibration** dialog will be shown when previous steps are done. Select Save, to store the calibration in the phone.



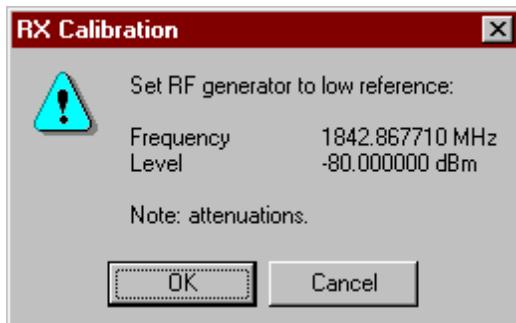
Changing the band from GSM to PCN is done automatically.  
Remember to change the band on the GSM signal generator.

User is requested to put signal generator to high input level  
(Read from .INI file).



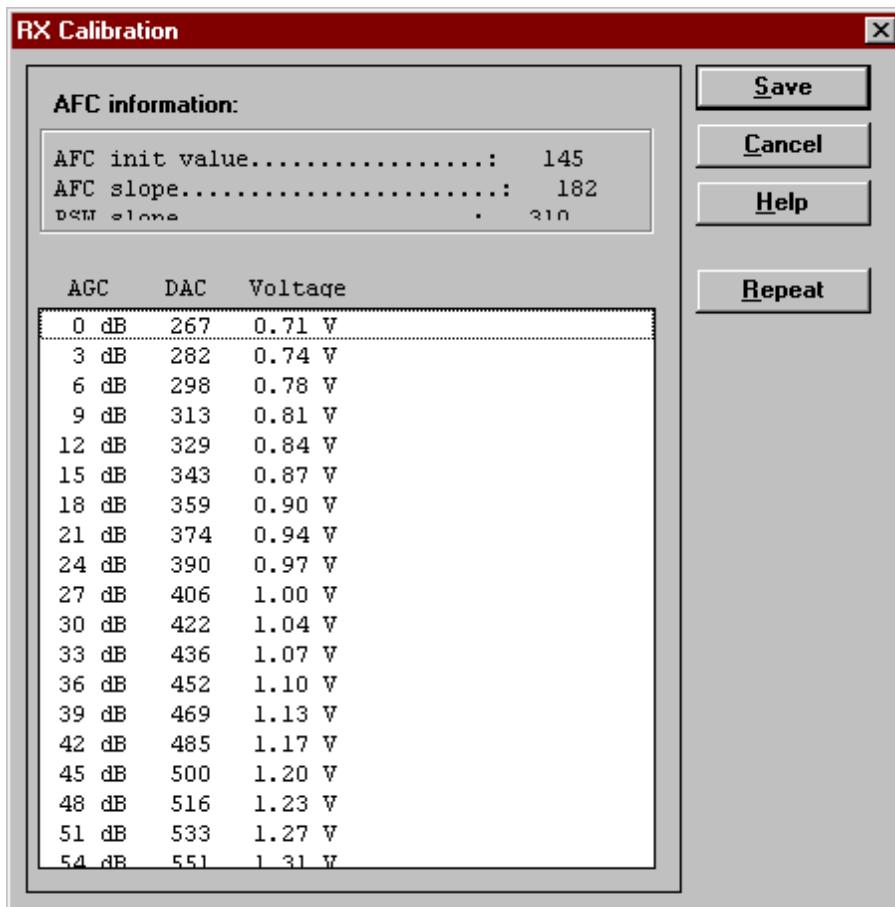
When the user acknowledges by pressing OK, the calibration with high input level is executed.

User is requested to put signal generator to low input level  
(Read from .INI file)



When the user acknowledges by pressing OK, the calibration with low input level is executed.

The RX Calibration dialog will be shown when these steps are done. Select Save, to save the calibration in the phone.



During tuning, proceed as follows:

- Take care not to damage sensitive measuring instruments with excessive RF power.
- Carry out all tuning steps in the shortest possible time to avoid excessive heating of RF units.
- Perform all tuning steps in the order presented.
- Never try to mask a fault by tuning it out!

After the tuning has finished the software reports the following:

- AFC init value
- AFC slope
- PSW slope
- AGC DAC values and the corresponding voltages for each gain step (0 – 57dB)

#### Limits for the reported values

If everything went well the reported values should **approximately** be the following:

Parameter	Low limit	High limit
AFC init value	-80	80
AFC slope	135	230
PSW slope	250	350
AGC 0 dB	175	325
AGC 57 dB	440	740
Difference between the two neighbor AGC steps	10	20

#### Troubleshooting

If the calibration does not succeed the software normally reports "Unable to read data from phone" or "Failed to set high reference" or "Failed to set low reference". In this case check first the basic functionality of the receiver chain: RF generator frequency set as in the calibration and level for example to the high reference value.

Then go to the RSSI reading menu (under RF controls). If the reading is very low there is something broken in the receiver and must be found by measuring voltages and signal levels at different places (information of these can be found elsewhere in this manual).

If the RSSI reading seems to be within 5 – 10 dB the same as the RF in-put level check that the VCTCXO (G650) frequency is close enough the wanted frequency. The easiest way to check this is by measuring the UHF VCO (G550) frequency, because the absolute value of the deviation is biggest there. In the GSM mid channel the UHF-VCO frequency should be 2040.0 MHz. If the deviation is bigger than about +/-20 kHz it is probable that the VCTCXO is not operating correctly.

If both of these (RSSI reading and the frequency) seem to be correct and calibration still fails the most probable reason is that there is a little lack of gain somewhere or the AGC gain control slope in N600 is out of the limits.

This can be verified by changing the generator reference levels from the demanded ones in the calibration procedure in 1–dB steps up and down. If the calibration goes through with some reference levels the corrective action is most probably changing N500 or N600.

Dialog mode: **modal**

RX Calibration dialog has the following items:

AFC information box:

Shows AGC,DAC voltage.

AGC List box (ALT+A):

AGC, DAC, Voltage and Difference. The difference column shows the difference between tuned DAC values and mean straight line calculated from part slopes in dBs (see /1/). This can be calculated when all measurement results have been received from phone.

Repeat button (ALT+R):

The measurement can be started again by pressing this button.

Save button (ALT+S):

Dialog is closed and tuning *is saved* to phone.

Cancel button (ESC):

Dialog is closed and tuning *is not saved* to phone.

When calibration is ended, the DAC value checking is made and if it is not succeeded, error message is shown.

When exit is made, the next selections are set to the values which were selected before this adjustment.

Operation Mode

Update RF Information window

The exit and the use of AGC-control values is done same way as exit from power level tuning and power coefficient use.

## **Tx Power... command**

An antenna cable, a GSM/PCN signal tester or either a Pulse Power Meter or a spectrum analyser along with a 10dB attenuator is needed for the tuning. If the tuning is performed with external voltage source, it shall be set to 3.6 V. Before starting the TX Power tuning the active band is set to the GSM band. For GSM the alignment channel is 60 (902 MHz) and for PCN 700 (1747.8 MHz). The side channels for GSM are 1 (890.2 MHz) and 124 (914.8 MHz) and for PCN 512 (1710.2 MHz) and 885 (1784.8 MHz).

*Note: In TX Power tuning the signal timing is irrelevant, and can not be measured since the phone is set to local mode.*

### **When using spectrum analyzer:**

The following **settings** for the spectrum analyzer are recommended when aligning the power levels: zero span, resolution and video bandwidths 1 MHz, input attenuation 40 dB, sweep time 1 ms, video triggering.

*Note! If spectrum analyzer is used in power level alignment the reading needs to be calibrated with a power meter after every power up.*

Start tuning

Activation	Status Bar Text
------------	-----------------

Alt, T,P              Initialising local mode....;

Starts TX power tuning.

The following automatic selection are made when the tuning function is activated:

Active unit            = TX

TX Power level        = 19 (The lowest power level)

Operation mode        = Burst

The TX power tuning is performed in the following 22 steps:

Select GSM band on the GSM/PCN signal tester or GSM/PCN Power Meter. Select the GSM band in WinTesla in menu Product, Band and GSM.

Compensate for antenna cable loss on the GSM/PCN signal tester or GSM/PCN Power Meter. Typical values for a standard cable is in GSM mode 0.6 – 0.7 dB cable loss.

Select measurement of average burst power on the GSM/PCN signal tester or GSM/PCN Power Meter.

Select the menu Testing and RF Controls. And set:

- Active Unit            = TX
- TX Data Type        = Random

Select the menu Tuning and Tx Power.

Select the BASE power level by pressing Alt+L and scroll with up/down arrow keys. Adjust the power level to be approximately –35 dBm (measured on the GSM/PCN tester or GSM/PCN Power Meter). Adjustment is done by pressing left/right arrow keys.

**Note:** As a rule of thumb It can be done by adjusting the value until no signal can be measured by the GSM/PCN tester and then weaken the power level two steps more.

Select power level 19. Adjust the signal to 5 dBm. (According to GSM specifications)

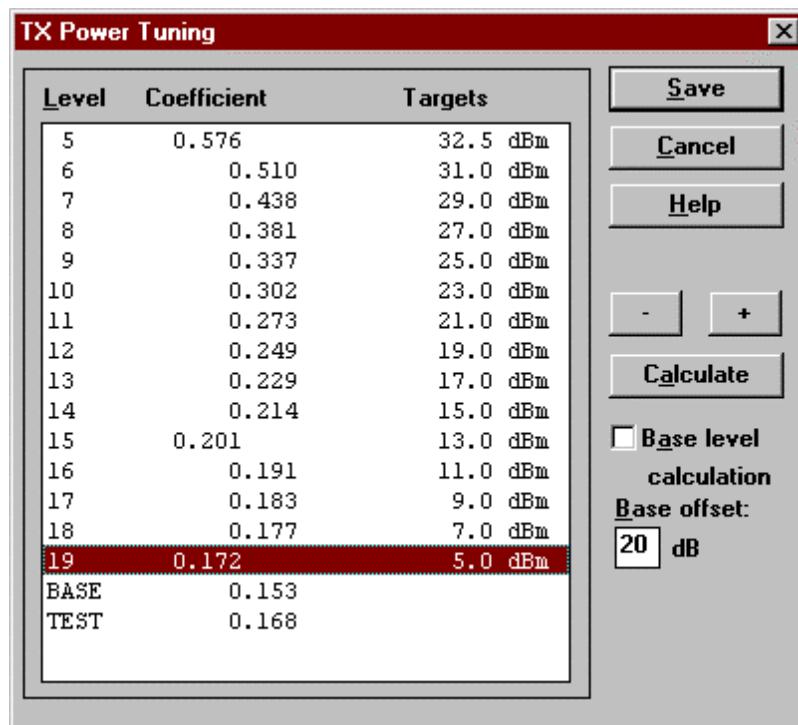
Select power level 15. Adjust the signal to 13 dBm. (According to GSM specifications)

Select power level 5. Adjust the signal to 32.5 dBm. (According to GSM specifications)

Select calculate to make WinTesla find the rest of the power level values.

**Note** Calculated values can be checked after the calculation and fine-tuned if needed in the same manner as previous power level tunings.

Save the TX power levels in the phone by pressing Save.



Select PCN band on the GSM/PCN signal tester or GSM/PCN Power Meter. Select the PCN band in WinTesla in menu Product, Band and PCN.

Compensate for antenna cable loss on the GSM/PCN signal tester or GSM/PCN Power Meter. Typical values for a standard cable is in PCN mode 1.1 – 1.2 dB cable loss.

Select measurement of average burst power on the GSM/PCN signal tester or GSM/PCN Power Meter.

Select the menu Testing and RF Controls. And set:

Select the menu Tuning and Tx Power.

Select the BASE power level by pressing Alt+L and scroll with up/down arrow keys. Adjust the power level to be approximately –35 dBm (measured on the GSM/PCN tester or GSM/PCN Power Meter). Adjust by pressing ‘–’ or ‘+’.

**Note:** As a rule of thumb It can be done by adjusting the value until no signal can be measured by the GSM/PCN tester and then weaken the power level two steps more.

Select power level 15. Adjust the signal to 2 dBm. (According to GSM specifications)

Select power level 11. Adjust the signal to 8 dBm. (According to GSM specifications)

Select power level 0. Adjust the signal to 30 dBm. (According to GSM specifications)

Select calculate to make WinTesla find the rest of the power level values.

**Note:** Calculated values can be checked after the calculation and fine-tuned if needed in the same manner as previous power level tunings.

Save the TX power levels in the phone by pressing Save.

Level	Coefficient	Targets
0	0.571	30.0 dBm
1	0.509	28.0 dBm
2	0.440	26.0 dBm
3	0.385	24.0 dBm
4	0.341	22.0 dBm
5	0.305	20.0 dBm
6	0.277	18.0 dBm
7	0.255	16.0 dBm
8	0.237	14.0 dBm
9	0.222	12.0 dBm
10	0.210	10.0 dBm
11	0.201	8.0 dBm
12	0.196	6.5 dBm
13	0.191	5.0 dBm
14	0.186	3.5 dBm
15	0.183	2.0 dBm
BASE	0.160	
TEST	0.175	

**Base level calculation**
  
**Base offset:**  dB

**During tuning, proceed as follows:**

- Take care not to damage sensitive measuring instruments with excessive RF power.
- Carry out all tuning steps in the shortest possible time to avoid excessive heating of RF units.
- Perform all tuning steps in the order presented.
- Never try to mask a fault by tuning it out!

It is recommended that all the power-levels are separately aligned, although there is a possibility to align only three and calculate the rest. This is due to the fact that the calculation is not accurate enough. Especially for the lowest power-levels in the PCN band, where the target power-levels are NSE-5 specific.

**Note** Base level **must** be adjusted manually because the calculation most often fails.

Dialog mode: **modal**

TX Power Tuning dialog has following items:

Power Level & Coefficients list box (ALT+L):

The power is presented in GSM or PCN values. The base power is selected automatically when the dialog is opened. The test value is not saved to the EEPROM. The test value can be changed during tuning as other power coefficients and the program remembers its value when tuning function is activated later again.

Only three power coefficients (highest, third smallest and lowest) are needed to tune (left justified Coefficients) and the rest of them are calculated.

The tuning position is highlighted and can be tuned with +/– keys or left/right cursor keys.

Calculate button (ALT+A):

The calculation is activated with this button. The power coefficients which are calculated from the tuned coefficients are displayed on the different columns than the others. All values can be tuned if needed.

Base level calculation check box:

If this box is checked the base level is calculated.

+/- buttons (+/– and left/right cursor keys):

+ and – buttons will cause power changing by 0.25dB steps. When these keys are used the coefficient value is updated on the tuning window.

Save button (ENTER):

Dialog is closed and tuned values are saved to phone.

Cancel button (ESC):

Dialog is closed and tuning *is not saved to phone*.

When selections are used, the power value checking is made and if it is not succeeded, error message is shown. The test checks that all power coefficients are in descending order (same order than power levels).

If the power tuning function is ended and EEPROM values are not received or EEPROM fault is noticed, an error message is shown.

When all power coefficients have such values that they don't cause any error messages, save can be made. The last used tuning power is in use after exit.

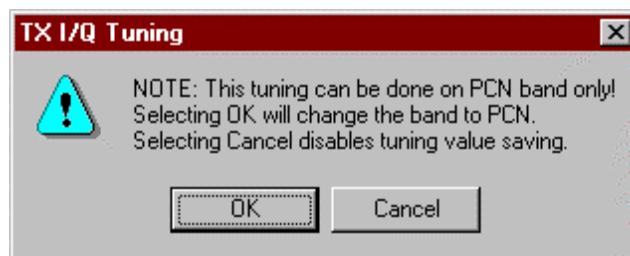
The next automatic selection is made when this tuning function is ended:

Active Unit	= RX
TX Power Level	= (Off)
Operation Mode	= Burst

### **Tx I/Q... command**

A GSM/PCN signal tester or a GSM/PCN Spectrum analyser and an antenna cable is needed for the tuning. Before starting the Tx I/Q tuning the active band is set to the PCN band.

**Note::** *I/Q modulator alignments are performed in PCN band. If GSM band has been selected and I/Q alignment is started, the service software asks to change to PCN band. If the user wants to continue in GSM, the adjusted values can only be saved to PC memory, not to phone's emulated EEPROM. After changing to PCN band values from PC memory are available, and if the modulator adjustment is good. The values can be saved to phone's emulated EEPROM. If tuning is tried in GSM mode, the following warning will pop up:*



Activation	Status Bar Text
Alt, T, Q	Initialising local mode...; Setting RF Defaults...; TX I/Q Tuning; Setting tuning on...;

This function is used for tuning TX I and Q branch DC offset, amplitude difference and phase difference.

The TX I/Q tuning is performed in the following 7 steps:

Connect the GSM/PCN signal tester or spectrum analyzer to the phone antenna connector. **When using spectrum**

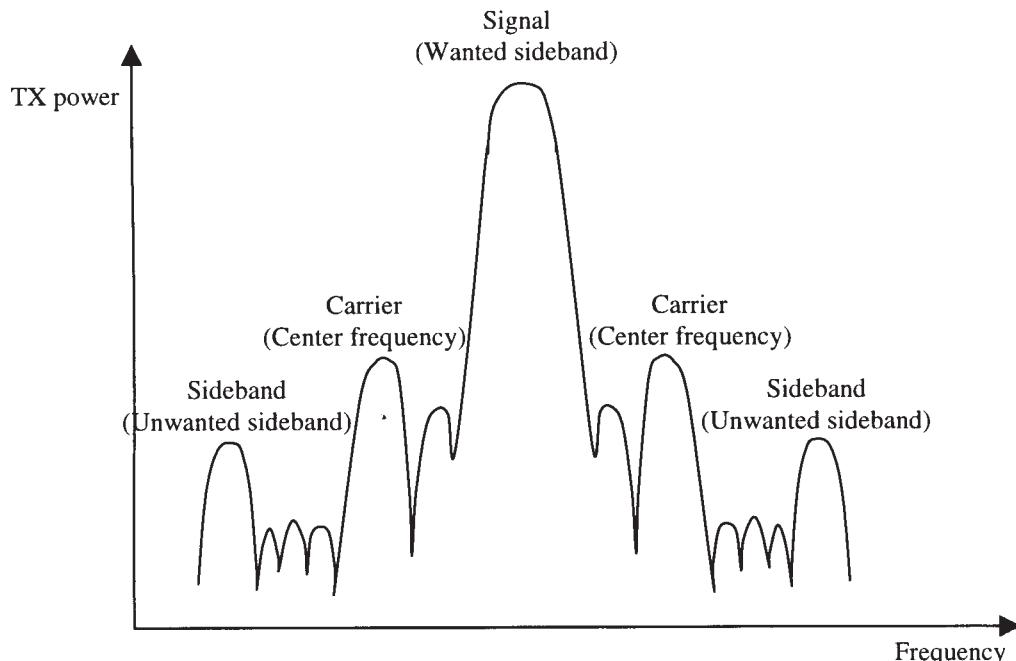
**analyzer:** The recommended spectrum analyzer settings are: span 200 kHz, resolution bandwidth 10 kHz, video bandwidth 1 kHz, sweep 500 ms, input attenuation 30 dB.

Select PCN band on the GSM/PCN signal tester or GSM/PCN Spectrum analyser. Select the PCN band in WinTesla in menu Product, Band and PCN.

Select the menu Tuning and Tx I/Q.

Choose the option EEPROM values to tune the TX I/Q values in the phone, and select OK.

Adjust the TX I DC Offset **and** TX Q DC Offset stepwise until the carriers are suppressed as much as possible (Refer to the drawing below). When tuning adjust the values slowly step by step.



Adjust the Amplitude difference and the Phase difference stepwise until the side bands are suppressed as much as possible (Refer to the drawing above). When tuning adjust the values slowly step by step.

Store the selected values to the phone by pressing OK.

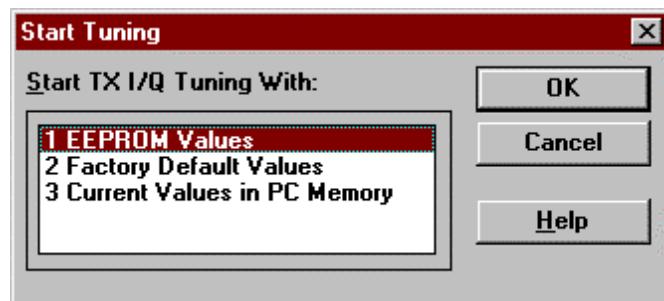
**During tuning, proceed as follows:**

- Take care not to damage sensitive measuring instruments with excessive RF power.
- Carry out all tuning steps in the shortest possible time to avoid excessive heating of RF units.
- Perform all tuning steps in the order presented.
- Never try to mask a fault by tuning it out!

**Tuning targets:**

The level of the carrier (center frequency CHF) should be at least **30 dB** down to the wanted sideband CHF – 67.71 kHz. The level of the unwanted sideband CHF + 67.71 kHz should be at least **35 dB** down to the wanted sideband CHF – 67.71 kHz.

The user is first requested to select with which values the tuning is started in Start Tuning dialog.



Dialog mode is modal

Start Tuning dialog has following items:

Start Tuning with list box (ALT+S):

EEPROM values

Tuning values are loaded from the phones EEPROM.

Factory Default Values

Tuning values are loaded from phones Flash.

Current Values in PC Memory

Tuning values are loaded from programs internal memory.

OK button (ENTER):

Selects the memory where the start values for the tuning are placed, closes the dialog box and continues with the TX I/Q dialog.

Cancel button (ESC):

Close the dialog box and cancel TX I/Q tuning.

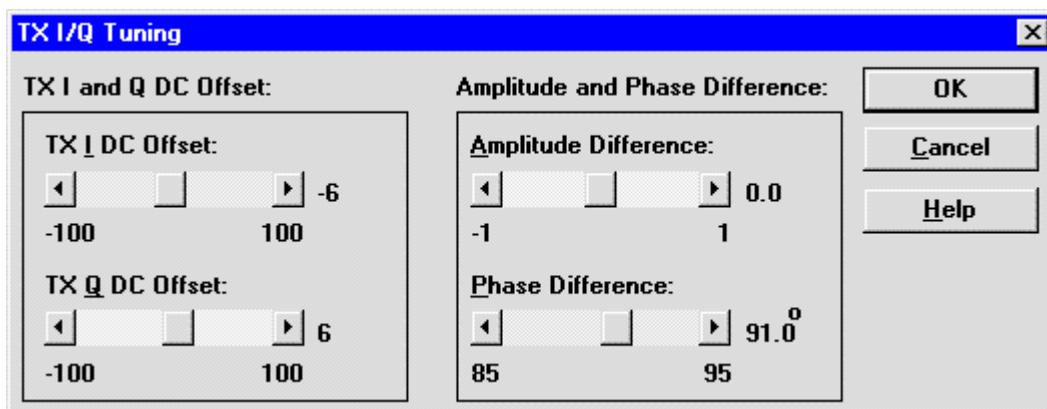
Help button (ALT+H):

Context-sensitive help.

The next automatic selections are made, and the RF Information window is updated when this function is activated:

- Band= PCN
- Active Unit= TX
- TX Data Type= Cont1
- TX Power level= 15
- Operation Mode= Burst

The **TX I/Q Tuning** dialog is opened.



Dialog mode: **modal**

TX I/Q Tuning has following items:

Tune TX I DC Offset scroll bar (ALT+I):

The DC Offset is shown as percents (%) from the  $\pm$  maximum value. 0% means that there is no DC. The value range is  $-100\ldots100\%$ . The value is rounded to the nearest integer value.

Tune TX Q DC Offset scroll bar (ALT+Q):

The operation of this function is the same as one above, except with this selection the Q branch DC Offset is tuned. The value range is  $-100\ldots100\%$ . The value is rounded to the nearest integer value.

Amplitude Difference scroll bar (ALT+A):

When this selection is made user can increase or decrease the amplitude difference within 0.1 dB steps. The value range is  $-1\ldots1$ .

**Phase Difference scroll bar (ALT+P):**

When this selection is made user can increase or decrease the phase difference within 0.5° steps. The current phase difference is shown on the tuning window with numbers and bar figure. The value range is -85...90.

**Save button (ENTER):**

Dialog is closed and tuning *is saved* to phone.

**Cancel button (ESC):**

Dialog is closed and tuning *is not saved* to phone.

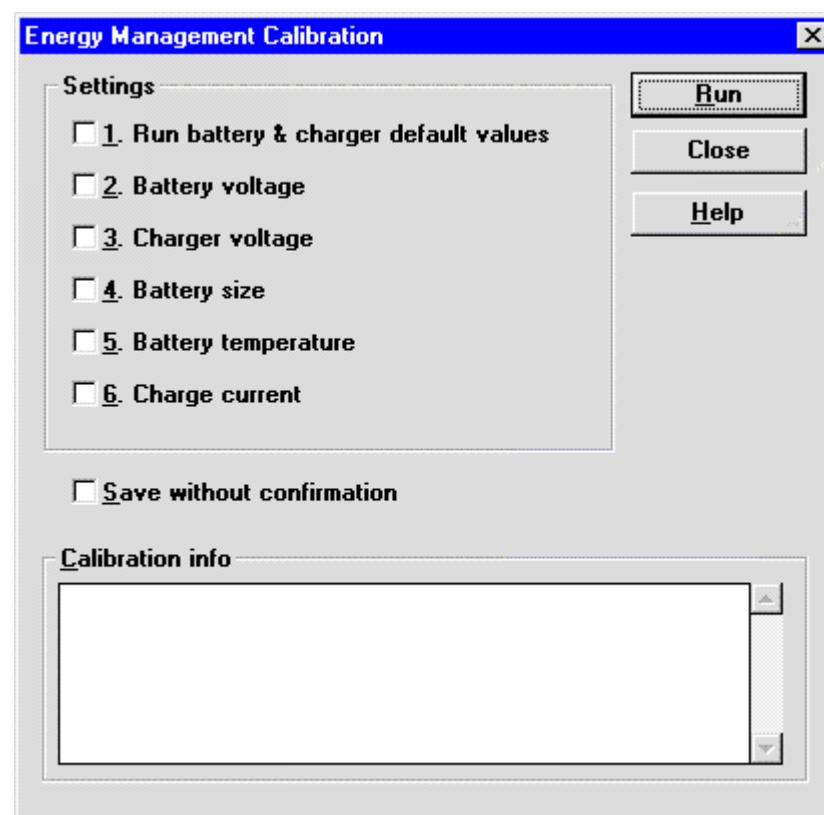
After each value change the new value is sent to the phone.

The next automatic selections are made, and the RF Information window is updated when the TX I/Q tuning function is ended:

- Band= GSM
- Active Unit= RX
- TX Power level= (Off)
- Operation Mode= Burst

**Energy Management Calibration... command**

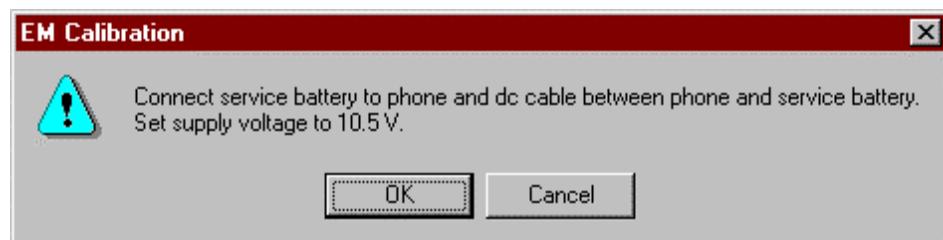
This command opens the **Energy Management Calibration** dialog box:



A DC power supply, a service battery and a 3-wire charger calibration cable is needed for this calibration.

**Note:** The Energy Management Calibration process in WinTesla should only be used when the factory calibration for some reason is not any longer valid in the phone. The factory calibration of the phone energy management parameters are more precise, thus it is possible to obtain better battery performance, when the calibration has been performed in the factory.

Activation	Status Bar Text
Alt, T,E	Initialising local mode...;  The Energy Management Calibration is performed in the following 12 steps: DC power supply is set to 10.5 Volts. Mount the service battery on the phone <b>and</b> connect the service battery with the phone by the charger calibration cable. Connect the service battery to the DC power supply. Select the menu Tuning and <u>E</u> nergy Management Calibration. The following dialog pop up:



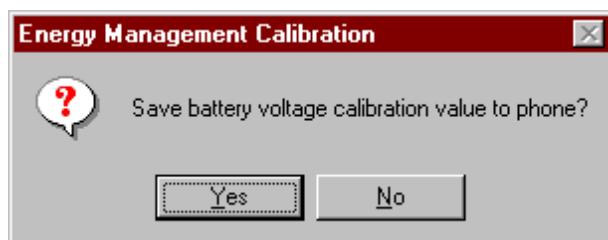
Select OK. The phone is set to local mode, and the energy management dialog pops up.

Select settings:

2. Battery voltage
3. Charger voltage
4. Battery size
5. Battery temperature
6. Charge current

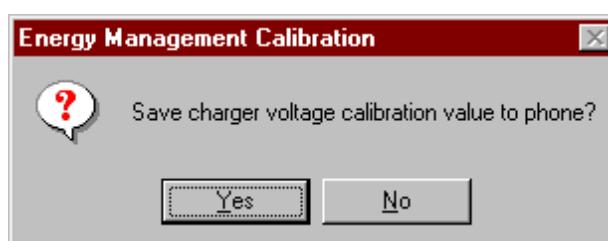
Press Run. (If also the setting “Save without confirmation” is selected, then steps 7 to 11 are not applicable.)

The following dialog pop up:



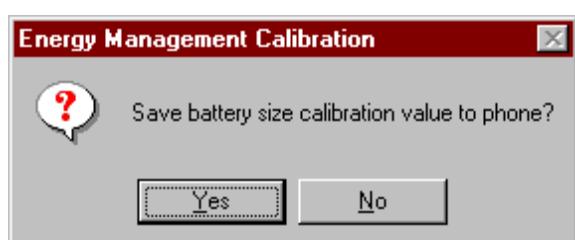
Select Yes.

The following dialog pop up:



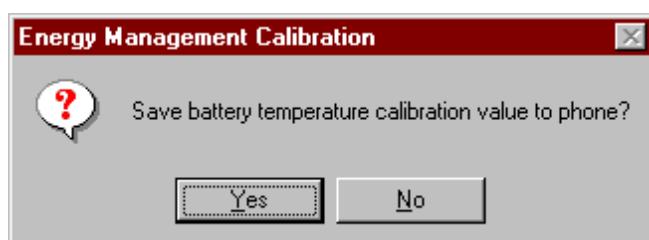
Select Yes.

The following dialog pop up:



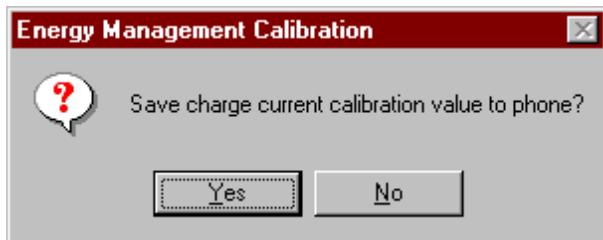
Select Yes.

The following dialog pop up:



Select Yes.

The following dialog pop up:



Select Yes.

When the previous steps are done, the phone energy management is calibrated. Press Close to end the calibration process.

The Energy Management Calibration dialog box contains the following options:

Run button (ALT+R):

Energy management calibration is performed,

Close button (ENTER):

The dialog box is closed without performing energy management calibration. When closing the dialog the user is prompted to adjust the power supply to 8.0 Volts:



Help button (ALT + H):

Displays context sensitive help.

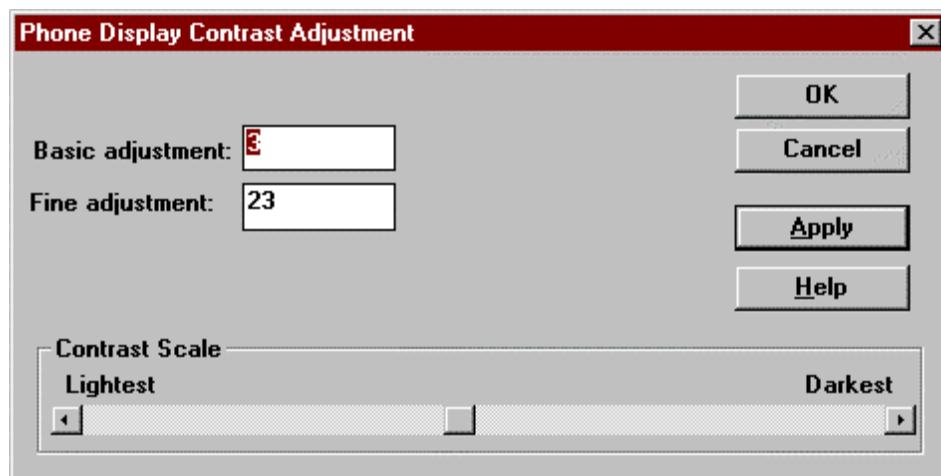
## Display Contrast Adjustment... command

This function is used for adjustment of the display contrast. No special equipment is needed for display contrast adjustment.

**Note:** The display contrast values stored in the phone can not be read from WinTesla. This means that if existing contrast settings are altered with this command, it is not possible to go back to the previously stored values.

Activation	Status Bar Text
------------	-----------------

Alt, T,D
----------



The command opens the Contrast adjustment dialog.

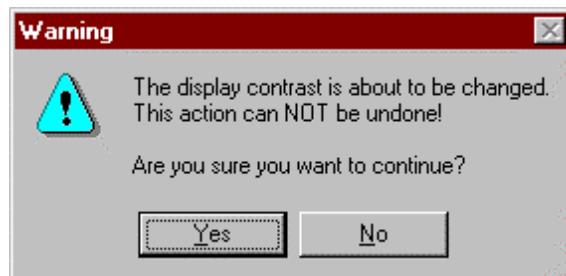
The Display Contrast Adjustment is performed in the following 5 steps:

Select menu item Tuning and Display Contrast Adjustment.

Select the default Basic and Fine adjustment settings in the Edit boxes. Normally:

Basic adjustment = 3  
Fine adjustment = 30

Press Apply. Since it is the first time the values are changed since the dialog was opened a warning is displayed (If selecting Yes it is **not** possible to return to previous values.):



Select Yes to modify the settings of the display contrast settings in the phone.

Now use the scroll bar to fine-tune the contrast by using the left/right arrow keys to adjust the contrast step by step. Do this slowly to allow the changes to be reflected in the phone.

When adjustment is finished press OK to end the adjustment.

Dialog mode: **modal**

Phone Display Contrast Adjustment dialog has following items:

Basic adjustment edit box:

This is the rough setting of the display contrast. Valid values are between 0 and 7.

Fine adjustment edit box:

This is the fine setting of the display contrast. Valid values are between 0 and 63.

Contrast Scale scroll bar:

The user can stepwise adjust the display contrast, by use of the left/right arrow keys.

OK button:

Applies contrast settings to the phone and closes the dialog box.

Cancel button:

Closes the dialog box without applying the contrast value to the phone.

Apply button (ALT+A):

Applies the entered values to the phone.

Help button (ALT+H):

Context sensitive help.

## Testing

The Testing sub menu offers functions for ME testing.

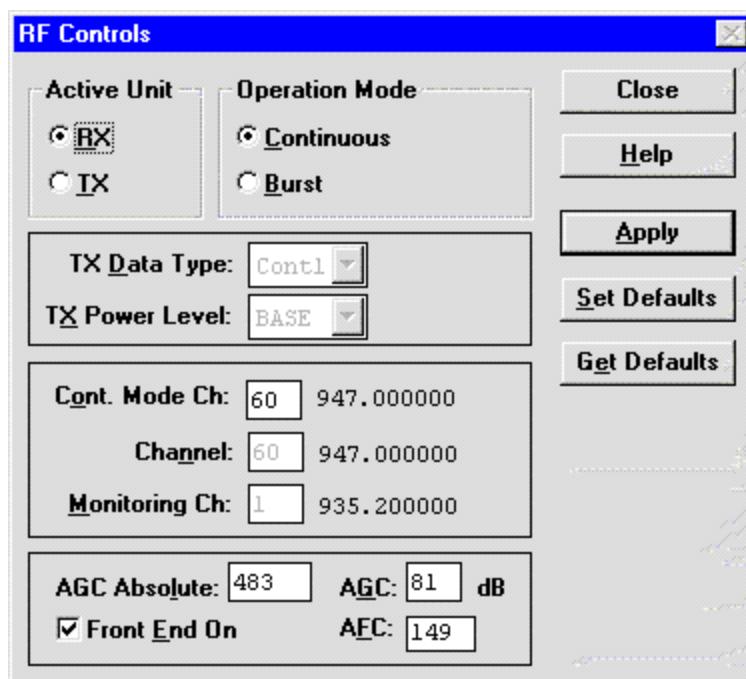
A GSM/PCN tester and an antenna cable is needed for this test.

### RF Controls... command

Activation	Status Bar Text
Alt, E,R	RF Controls; Set test on...;

This function is used for RF testing.

Command opens **RF Controls** dialog, which contains data for testing and adjustments.



Dialog mode: **modal**

RF Controls dialog has following items:

Active Unit group:

RX radio button (ALT+R):

When *RX* is selected, the next functions are made:

Data transmission is deactivated

- TX power is deactivated
- Rf operation mode is continuous,
- AGC is controlled

RX continuous mode channel is activated

- RF Information window is updated

The RX value is always given as default.

**Note** Function is activated immediately, Apply is not needed.

TX radio button (ALT+T):

When TX is selected, the next functions are made:

- Data transmission is activated
- If operation mode is continuous,

Operation mode is set to burst

- RF Information window is updated

Continuous mode radio button is disabled.

**Note** Function is activated immediately, Apply is not needed.

Operation Mode group:

Continuous radio button (ALT+C):

When *continuous* selection is used,

- synthesiser is set to constant frequency
- synthesiser channel number is as given with Continuous Mode Channel selection
- transmitter power is not connected
- if Active Unit is RX, AGC is controlled

**Note** Function is activated immediately, Apply is not needed.

Burst radio button (ALT+B):

When *burst* selection is used,

- synthesiser is controlled by using receiving/transmission/measuring synthesiser control sequence
- synthesiser channel numbers are as given with Channel/Monitoring Channel selections
- if Active Unit is TX, data (selected with TX Data Type) is sent and the TX power is connected

**Note!** Function is activated immediately, Apply is not needed.

**TX Data Type** drop list (ALT+D): With this value the data transmission pattern can be selected. Possible options are:

- Random pattern
- Continuous zeroes
- Continuous ones

The TX Data Type is greyed when the active unit is RX.

**TX Power Level** edit box (ALT+X):

With this value is possible to change the transmission power. The user can give the needed power value or select the test value, which is tuned with TX power tuning function. The test value is found at the end of the list.

TX Power have value *OFF* and is disabled (*greyed*) when active unit is RX. When the TX power is tuned with test value (smallest value) the TX Power has value *TEST*.

**Channel** edit box (ALT+N):

User can enter here channel number that is used for both transmission and receiving. The frequency of the selected channel is shown after selection. The channel edit box is disabled (*greyed*) when the operation mode is continuous.

**Monitoring Channel** edit box (ALT+M):

This field selects neighbour monitoring channel. The frequency of the selected channel is shown after selection. The monitoring channel edit box is disabled (*greyed*) when the operation mode is burst.

**Continuous Mode Channel** edit box (ALT+O):

To this edit box user can type continuous mode channel which may have all channel numbers. The continuous mode channel edit box is disabled (*greyed*) when the operation mode is burst.

The used frequency depends on the Active Unit. If Active Unit is RX, then RX frequency is used, else TX frequency. The frequency of the selected channel is shown after selection.

**AGC Absolute** edit box (ALT+L):

This selection allows user to edit AGC absolute value (value from A/D converter).

When AGC Absolute value is changed the AGC dB value will be calculated depending on the AGC Absolute value. The AGC Absolute edit box is disabled (*greyed*) when the operation mode is burst.

**Front End On check box: (ALT+E)**

This selection allows user to change whether the Front End amplifier is On or Off. The Front End On check box is disabled (greyed) when the operation mode is burst.

**AGC edit box (ALT+G):**

This selection allows user to edit AGC value in dB

**AFC edit box (ALT+F):**

This selection allows the user to edit the AFC slope in DAC values.

AGC value is shown only when its value is controlled by PC. When Active Unit has value RX and Operation Mode is continuous, AGC is controlled by PC except when next adjustment functions are activated:

RSSI Calibration

AFC Diagram

**Apply button (ALT+A):**

Accepts entered values and validates them. After validation application sends corresponding messages to ME. Closes dialog and updates Info Window.

**Note** Active Unit and Operation mode are not send with because they are activated immediately.

**Set Defaults button (ALT+S):**

Sets the current values as default Rf Control values.

**Get Defaults button (ALT+U):**

Gets default Rf Controls values as current values.

The next automatic selection is made when Quick testing function is ended:

Active Unit = RX

Update RF Information window

The next table shows the dialog's properties on different situations:

ACTIVE UNIT = TX:

TX Data Type: Updated

AGC values: Greyed

Monitoring Channel: Greyed

OPERATION MODE = BURST:

TX Power Level: Updated

Continuous Mode Channel: Greyed

Channel: Updated

ACTIVE UNIT = RX:

TX Data Type: Greyed

TX Power Level: BASE, Greyed

Operation Mode = Burst:

AGC values: Greyed

Continuous Mode Channel: Greyed

Channel: Updated

Monitoring Channel: Updated

OPERATION MODE = CONT:

AGC values: Updated

Continuous Mode Channel: Updated

Channel: Greyed

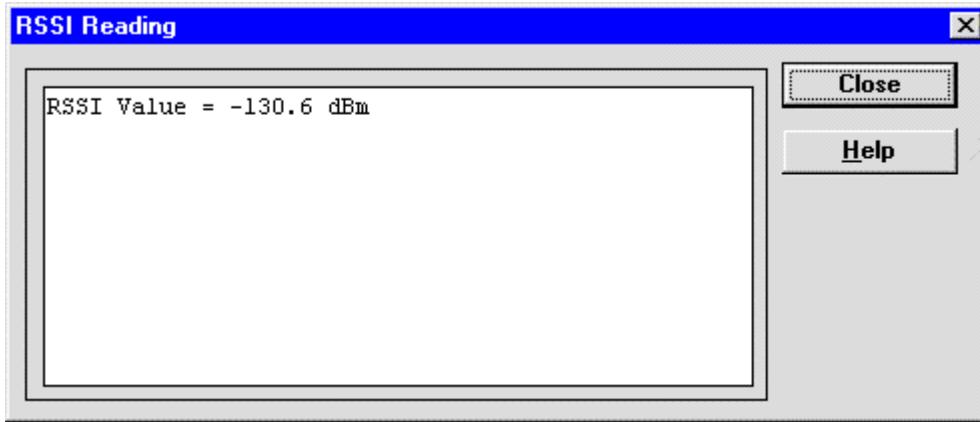
Monitoring Channel: Greyed

### **RSSI Reading... command**

A GSM/PCN signal generator and an antenna cable is needed for this test.

Activation	Status Bar Text
Alt, E,E	RSSI reading from ME...

Command opens RSSI Reading dialog:  
Dialog mode: **modal**  
RSSI value is read continuously until user presses ESC-key or Close button to cancel reading.



RSSI Reading dialog has following items:

**Close (ENTER) button:**

Closes the RSSI Reading dialog. Does not send anything to phone.

**Help button:**

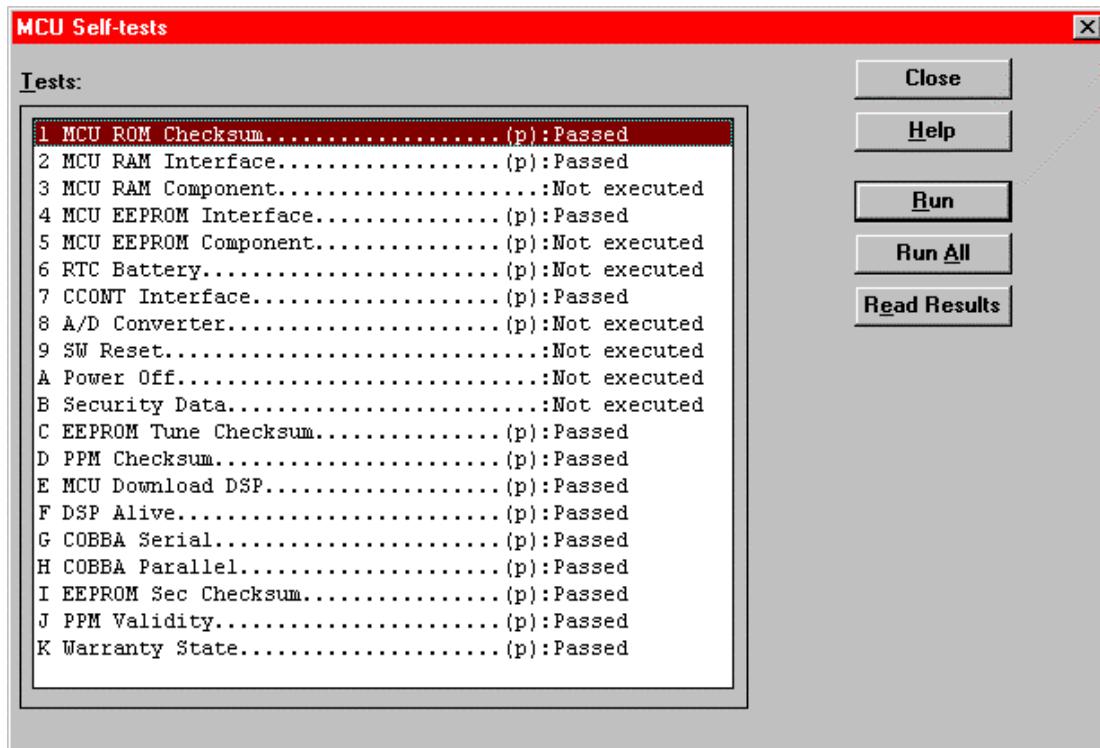
Context sensitive help.

**Self Tests... command**

Activation	Status Bar Text
Alt, E,S	MCU Self–tests; Reading from ME...

Command is used for reading self test results and running self tests.

When the selection is made, the test result is read from ME. The test result will be shown to the user within **MCU Self-test** dialog.



### Dialog mode: modal

MCU Self-test dialog has following items:

#### Tests list box (ALT+T):

The field "(p)" in the screen example means that the test is also run in power up. The field "(/s)" means that this test is selectable one.

Test states are updated according to results received from the phone. Possible test states will be one of the next:

Passed

Failed

No response

Not executed

Not valid

RUNNING....

**Note** that power-off test have no values, because if test has been passed, power has been turned off. If power-off test fails a special error message window is shown. If no response is received to power off test message in a few seconds, the user is informed by

*special info window, where user is asked to turn the power on and then press the return key.*

**Note** also that power-off test (if passed) turns power off and power should be reconnected by using the phones keypad after the successful test. After the power has been connected to phone, the normal start-up routines are made and the self-test results are shown in the MCU self-tests menu (i.e. all other than power-up self-tests are in Not executed state after the power-up routines).

#### Run button (ALT+R):

User can select desired test from list and hit **Run** button. When user selects test to be run the text *RUNNING...* is shown in test state field and test is run. When results are received the test state field is updated according to the result.

If no response was received in the defined time, a *error message box* will be shown and the test state is changed to *No response*. Phone is set to local mode if it is not already there.

#### Run All button (ALT+A):

User can run all listed tests. The text *RUNNING...* is shown in test state field and test is run. When results are received the test state field is updated according to the result. When state field is updated application moves to next test and repeats previous cycle. Phone is set to local mode if it is not already there.

### Supported Self Tests

The following tests are available:

- 1 MCU ROM Checksum.....
- 2 MCU RAM Interface.....
- 3 MCU RAM Component.....
- 4 MCU EEPROM Interface.....
- 5 MCU EEPROM Component.....
- 6 RTC Battery.....
- 7 CCONT Interface.....
- 8 A/D Converter.....
- 9 SW Reset.....
- A Power Off.....
- B Security Data.....
- C EEPROM Tune Checksum.....
- D PPM Checksum.....

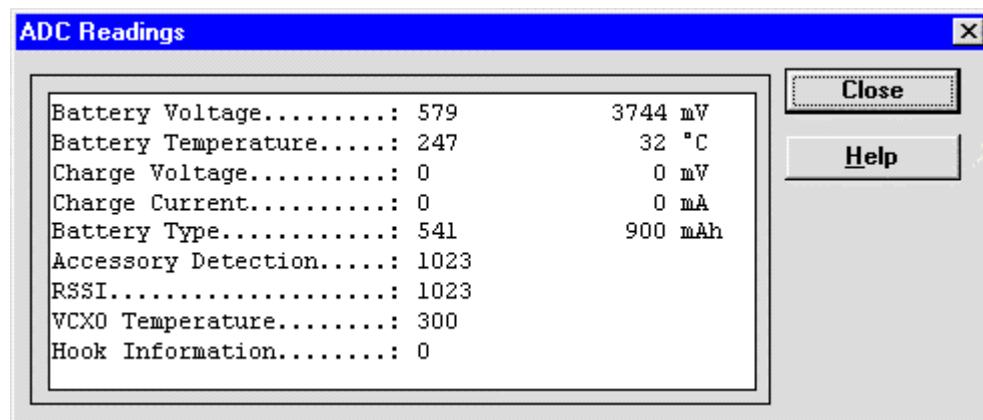
- E MCU Download DSP.....
- F DSP Alive.....
- G COBBA Serial.....
- H COBBA Parallel.....
- I EEPROM Sec Checksum.....
- J PPM Validity.....
- K Warranty State.....

### **ADC Readings... command**

Activation	Status Bar Text
Alt, E,A	ADC Readings; Set test on... ADC Readings; Reading from ME....

Command is used to read and show A/D values from phone.

Command opens **ADC Readings** dialog.



Dialog mode: **modal**

ADC Readings dialog has static text field where measurements are updated to window every one second.

ADC Readings dialog has following items:

Close (ENTER) button:

Closes the ADC Readings dialog. Does not send anything to phone.

Help button: (ALT+H) .

Context sensitive help

Following a/d readings are measured:

- Battery Voltage.....
- Battery Temperature.....
- Charge Voltage.....
- Charge Current.....
- Battery Type.....
- Accessory Detection.....
- RSSI.....
- VCXO Temperature.....
- Hook Informaton.....

### **Audio... command**

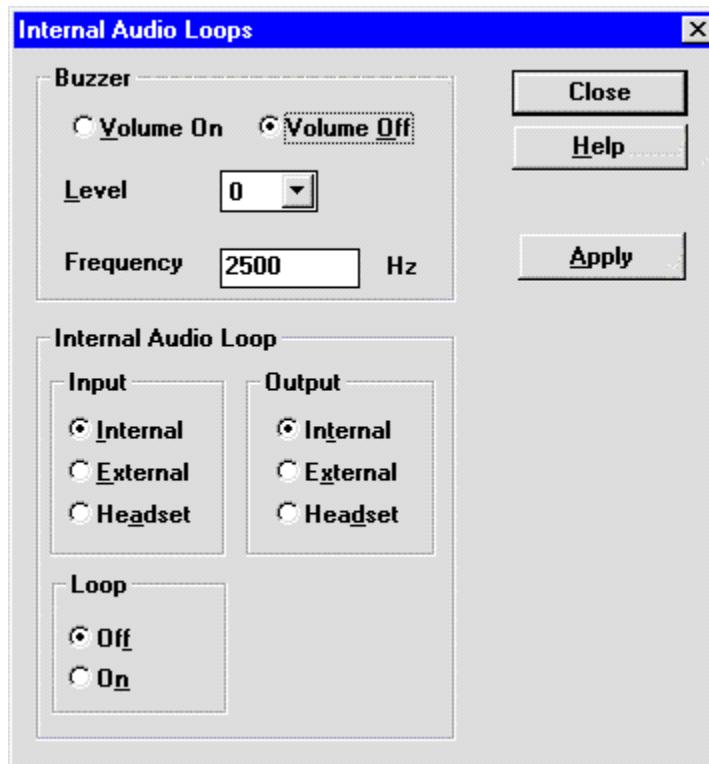
Activation	Status Bar Text
Alt, E,U	Opens a submenu which contains following options:

### **Internal Audio Loops**

An audio cable, a function generator, an oscilloscope, a multimeter, a headset and an audio box is optional equipment for the audio tests.

Activation	Status Bar Text
Alt, E,U,I	Initialising local mode.... Internal Audio Loops; Set test on....

Command is used for making internal audio loop tests in **Internal Audio Loops** dialog.



Dialog mode: **modal**

Internal Audio Loops dialog has following items:

Buzzer Volume group:

Next three different values can be selected for Buzzer volume:

Volume On radio button (ALT+V):

Turns buzzer on.

Volume Off radio button (ALT+O):

Turns buzzer off.

Level drop down list (ALT+L):

Sets level of a buzzer. Allowed range 0...127

Frequency edit box (ALT+Q)

Sets the sound frequency in Hz

Internal Audio Loop group:

Input group:

Next two different values can be selected for input:

Internal radio button (ALT+I):

Turns internal input.

External radio button (ALT+E):

Turns external input.

Headset radio button (ALT+A):

Turns headset input.

Output group:

Next two different values can be selected for output:

Internal radio button (ALT+T):

Turns internal output.

External radio button (ALT+X):

Turns external output.

Headset radio button (ALT+D):

Turns headset output.

Loop group:

Next two different values can be selected for loop:

Off radio button (ALT+F):

Turns audio loop off.

On radio button (ALT+N):

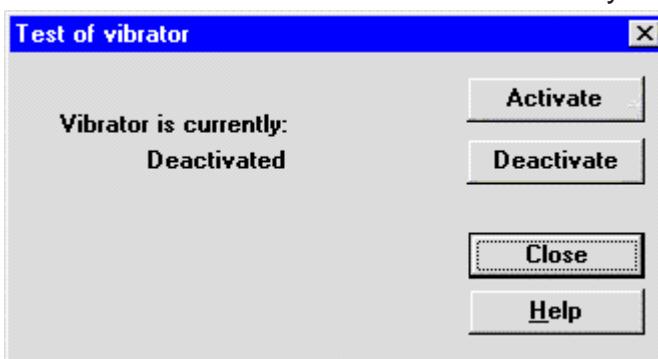
Turns audio loop on.

When dialog is closed, the Buzzer Volume is switched off. Also internal audio loop is turned off.

### Vibrator.....command

Activation	Status Bar Text
Alt, E, V	Initialising local mode....

Command used to test vibrator functionality



**Dialog mode: modal**

Test of vibrator dialog has following items:

Vibrator is currently status text:

Displays the current status of the vibrator. Possible statuses are:

- Activated
- Deactivated

Activate button (ALT+A):

Activates the vibrator.

Deactivate button (ALT+D):

Deactivates the vibrator.

Close button (ESC):

Deactivates the vibrator, set the phone in normal mode and closes the dialog.

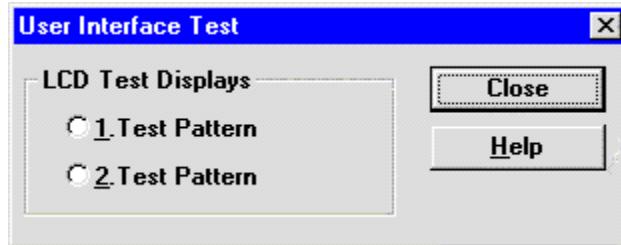
Help button (ALT+H):

Context sensitive help.

**User Interface... command**

Activation	Status Bar Text
Alt, E,T	User Interface Test; Set test on

Command is used for making display tests in **Display Tests** dialog.



**Dialog mode: modal**

Display Tests dialog has following items:

1. Test Pattern radio button (ALT+1):

In test display 1 the display is filled with chessboard letters.

2. Test Pattern radio button (ALT+2):

In test display 2 the display is filled with inverse chessboard letters.

Close button (ENTER):

Clears the display and closes the dialog. To get normal display, set the phone in normal mode.

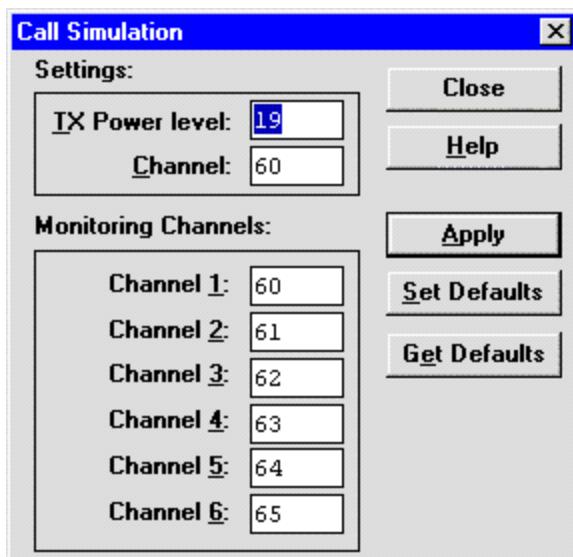
Help button (ALT+H):

Context sensitive help.

### **Call Simulation... command**

Activation	Status Bar Text
Alt, E, C	Initialising local mode
	Setting RF Defaults
	Call Simulation; Set test on

Command is used for making call simulation. Function opens **Call Simulation** dialog.



Dialog mode: **modal**

Call Simulation dialog has following items:

TX Power Level edit box (ALT+T):

All power levels can be selected. This updates same parameter as **TX Power Level** in the **RF Controls** dialog. Note that TEST value cannot be selected. If TEST value was in use when Call simulation menu selected, power level is changed to smallest value.

Channel edit box (ALT+C):

This tells the normal operating RF channel number. Normal GSM/PCN channel numbers can be selected.

Same channel is used both for transmission and receiving. This updates same parameter as **Channel** in the **RF-Controls** dialog.

Channel 1,2,3,4,5,6 edit box (ALT+1,2,...):

Channels for monitoring are specified with these six selections. All GSM/PCN channel numbers can be used. If more than one selection has same number, the monitoring channel list (neighbour list) will have less than 6 selected channels. The minimum number of monitoring channels is one (all channels have same value). The monitoring channel can also have same value as normal operating channel.

The first monitoring channel updates same parameter as **Monitoring Channel** in the **RF-Controls** dialog.

Apply button (ALT+A):

Validates and sends entered data to ME.

Set Defaults button (ALT+S):

Sets current values as default Call Simulation values.

Get Defaults button (ALT+G):

Gets default Call Simulation values as current values.

### **Noise Sensitivity... command**

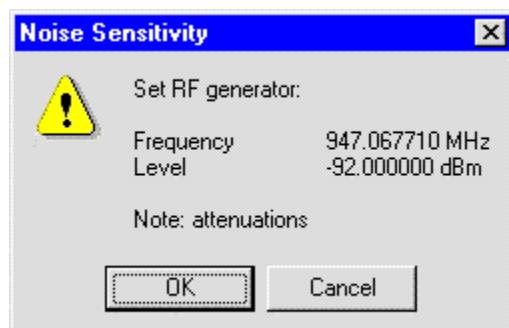
A GSM/Signal generator and an antenna cable is needed for this test. The active band must be set to the GSM band.

Activation	Status Bar Text
Alt, E, N	Initialising local mode...; Noise Sensitivity; Set test on...;

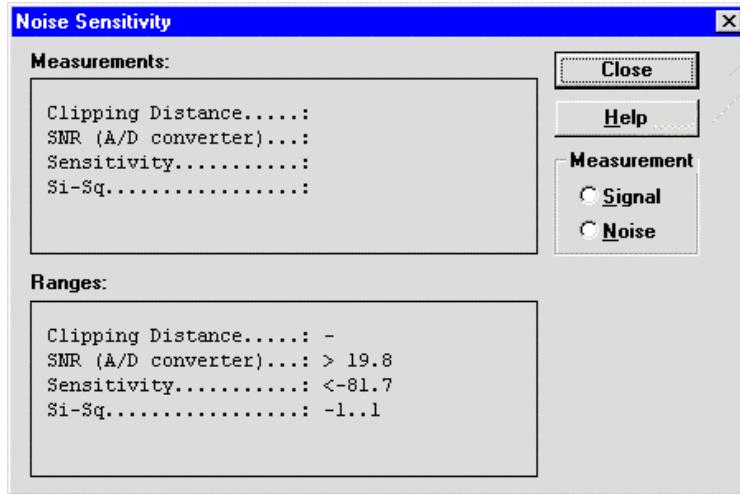
Command is used for noise sensitivity measurement.  
The next automatic selections are made when this tuning function is activated:

- Active unit = RX
- Operation mode= Burst
- AGC value = 81 dB

Before function opens **Noise Sensitivity** dialog application prompts:



Then application opens **Noise Sensitivity** dialog:



Dialog mode: **modal**

Noise Sensitivity dialog has following items:

Measurements group:

Clipping distance is the difference to the signal clipping value. SNR is measured in an AD converter. Sensitivity is a calculated value based on the measured SNR value.

The last value on the display is signal power difference between I and Q branch. The numbers are shown in 0.1dB accuracy. The error messages, "OUT OF RANGE", are shown only if the SNR and/or amplitude difference values are not acceptable.

Signal/Noise radiobutton (ALT+S/ALT+N):

When buttons are pressed, the RX I and Q burst data is asked, text "SIGNAL MEASURING..." or "NOISE MEASURING..." will come to the measurement group window. The power level value should be -92 dBm during signal measurement.

When signal data is received, distance to clipping signal level is shown as dBs on the display. When either signal or noise measurement results are received "MEASURING" text is removed and measurements are updated to screen. When both measurements (signal and noise) are done at least once, the signal to noise relation and difference are also shown on the display.

When exit is made, the next selections are set to the values which were selected before this adjustment.

- Active unit
- Operation mode
- AGC value

### **IR Test... command**

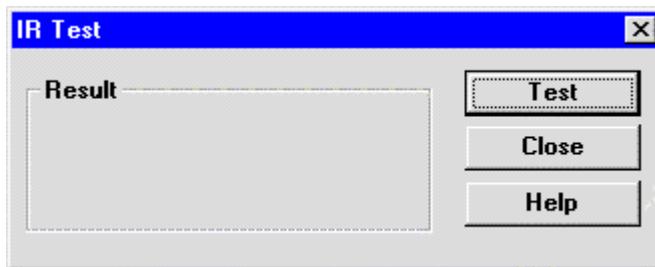
A Combox and an infrared test cable is needed for this test.

Activation      Status Bar Text

---

Alt, E,I      IR test; Set test on...;

Command is used for making IR module test. Function opens **IR Test** dialog:



Dialog mode: **modal**

IR Test dialog has following items:

Result box:

Result can be OK/FAILED

Test button (ALT+T):

Starts IR Test.

Close button (ENTER):

Closes the IR Test dialog.

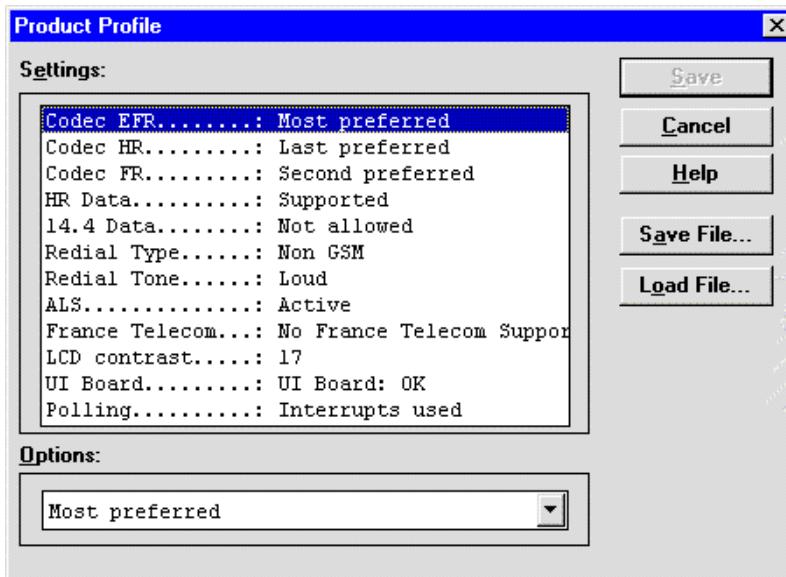
Help button (ALT+H):

Context sensitive help.

## Software

### Product Profile... command

Activation	Status Bar Text
Alt, S,P	Product Profile; Reading from ME...
Function is used for making product profile settings.	
When command is activated the product profile information is read from EEPROM and <b>Product Profile</b> dialog is opened.	



Dialog mode: **modal**

Product Profile dialog has following items:

Settings list box (ALT+E):

A list where user can select desired setting.

User can change settings in the Options drop list.

Options drop list (ALT+O):

List allows user to set options to each settings which are listed in **Settings** list box.

Save button (ENTER):

Selections are accepted and saved to EEPROM.

Cancel button (ALT+C):

Selections are ignored and control is returned back to main menu.

**Help button (ALT+H):**

Context sensitive help.

**Save File button (ALT+A):**

Save settings to a file on the PC.

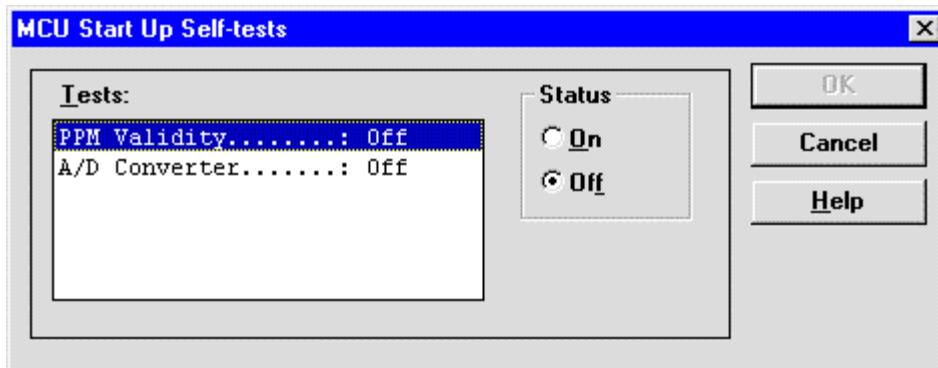
**Load File button (ALT+O):**

Load settings from a file on the PC.

### **Start Up Self-tests... command**

Activation	Status Bar Text
Alt, S,S	MCU start Up Self-Tests.

Function is used for changing the state of the EEPROM selectable tests in **MCU Start Up Self-tests** dialog.



Dialog mode: **modal**

MCU Start Up Self-tests dialog has following items:

**Tests list box (ALT+T):**

When dialog is opened, the previous values will be read from the MCU EEPROM and shown on the list box.

**Status group:**

When radio button **On** is selected, the test will be run every time when automatic start up self-tests are activated (e.g. in power up).

**OK button (ENTER)**

Selections are accepted and saved to EEPROM. A power up routine is made to phone.

**Cancel button (ESC)**

Selections are ignored and control is returned back to main menu.

Selectable Start-Up self tests:

- PPM Validity
- A/D Converter

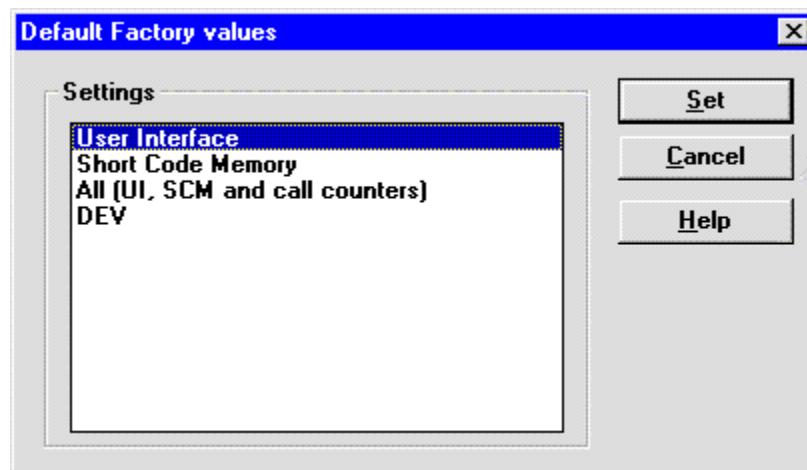
### **Set Factory Values... command**

Activation	Status Bar Text
------------	-----------------

Alt, S, V	Setting Default Factory Values; Initialising normal mode...;
-----------	---

Application does not ask confirmation. Next kind of text will be shown to user:

“Setting UI and SCM Factory values...”



Dialog mode: **modal**

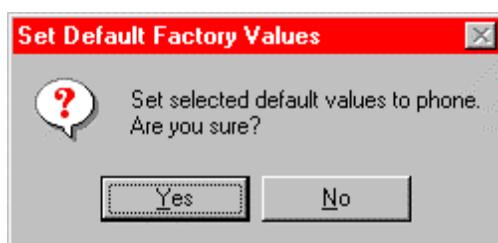
Default Factory Values dialog has following items:

Settings list box:

Contains the selectable factory values.

Set button (ALT+S)

Sets the selected factory value to phone. Before setting software asks confirmation:



Cancel button (ALT+C)

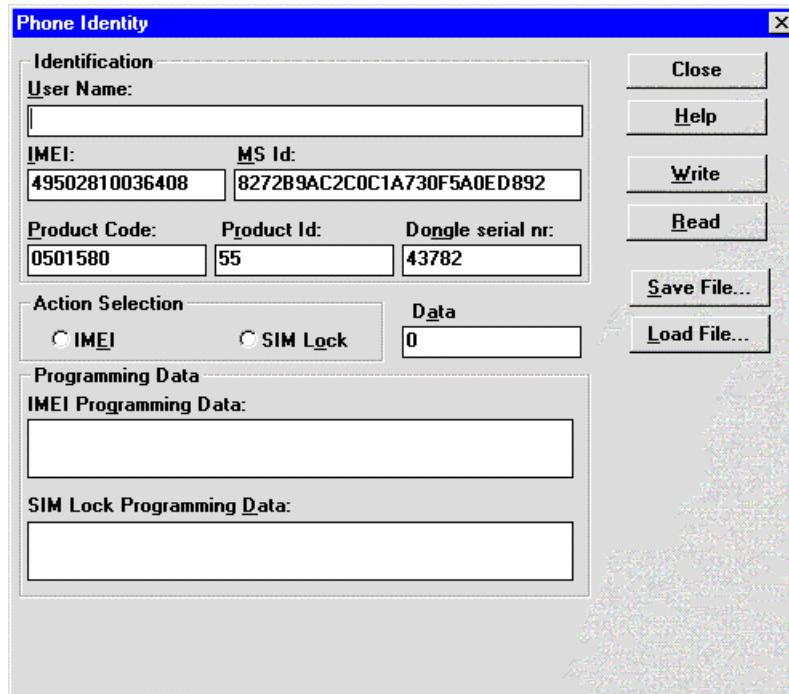
Closes the Default Factory Values dialog.

Help button (ALT+H):

Context sensitive help.

### **Phone Identity... command**

Activation	Status Bar Text
Alt, S,I	Phone Identity: reading from ME...
Function is used to edit phone identity. With this dialog IMEI or SIM locks may be changed in following manner:	
<ul style="list-style-type: none"> <li>– current phone information is read from phone</li> <li>– user edits User Name (and IMEI, Product Code and Product Id, if they were not read correctly from phone)</li> <li>– dialog information is saved to file, which is sent to secure place where actual programming information may be constructed</li> <li>– programming information is got from secure place in an other file, which is loaded to dialog</li> <li>– program checks input values and if they are correct programming information is written to phone</li> </ul>	
Function opens <b>Phone Identity</b> dialog.	



Dialog mode: **modal**

Phone Identity dialog has following items:

User Name edit box (ALT+U):

Field where user can enter user identification.

IMEI edit box (ALT+I):

Field where user can enter IMEI value. Field can contain up to 40 digits.

This field is automatically filled, if ME is connected to the PC when dialog is loaded.

Product Code edit box (ALT+P):

Field where user can enter Product Code value.

This field is automatically filled, if ME is connected to the PC when dialog is loaded.

MS Id edit box (ALT+M):

Field where user can enter MS Id corresponding programming data. This field is automatically filled, if ME is connected to the PC when dialog is loaded.

Product Id edit box (ALT+R):

Field where user can enter Product Id. This field is automatically filled, if ME is connected to the PC when dialog is loaded.

Dongle serial nr edit box (ALT+N):

Field where the user can enter the dongle number. This field is automatically filled when opening the dialog.

Data edit box (ALT+A):

Field where user can enter Data entry. This field is automatically filled, when file is loaded or data is saved.

IMEI radio button (ALT+E):

File and ME operations contains only IMEI data.

SIM Lock radio button (ALT+O):

File and ME operations contains only SIM Lock data.

IMEI Programming Data edit box (ALT+G):

IMEI programming data is read from file or entered by user to this field.

SIM Lock Programming Data edit box (ALT+D):

SIM Lock programming data is read from file or entered by user to this field.

Close button (ESC):

Cancels all edits and does not save values to phone.

Help button (ALT+H)

Opens a help text.

Write button (ALT+W):

Writes programming data to phone. Actions are selected with Action Selection radio button.

Read button (ALT+R):

Reads identification data from phone and shows it in dialog controls.

Needed data is selected by Action Selection radio button.

Save File... button (ALT+S):

Writes a file containing data needed by security place application to create needed programming data. File is selected with File Save As dialog.

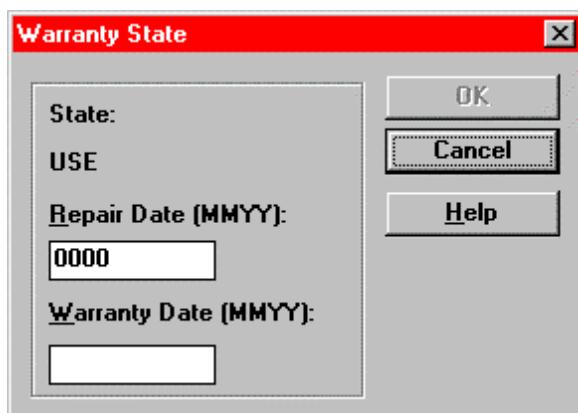
Load File... button (ALT+L):

Reads a file containing data needed to program selected data. File is selected with File Open dialog.

### Warranty State... command

Activation	Status Bar Text
Alt, S, W	Initialising local mode Warranty State; Reading from ME...

Command used to read warranty information from MS



Dialog mode: **Modal**

Warranty State dialog has the following items:

State indication:

This is a status on the warranty of the phone. Possible states are:

- USE
- DEFECTED

In USE state the repair date can be edited.

In DEFECTED state the warranty date can be edited.

Repair Date edit box (ALT+R):

Shows the latest date of repair as month and year.

Warranty Date edit box (ALT+W):

Shows the date the phone was found DEFECTIVE.

OK button (ENTER):

Saves the entered date in the phone and closes the dialog

Cancel button (ESC):

Closes the dialog without saving dates in the phone.

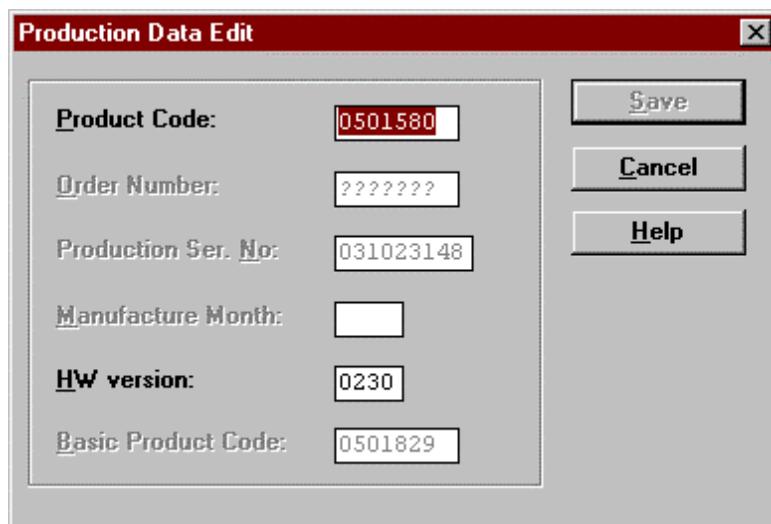
Help button (ALT+H):

Context sensitive help.

### Production Data Edit... command

Activation	Status Bar Text
Alt, S, D	Production Data Edit; Reading from ME...

This command is used for programming HW version to phone. Function opens the following **Production Data Edit** dialog box.



Dialog mode: **modal**

Production Data dialog has the following items:

Product Code edit box (ALT+P):

Displays production code, and enables the user to change it.

Order Number edit box (read only):

Displays order number.

Production Ser. No edit box (read only):

Displays production serial number.

Manufacture Month edit box (read only):

Displays manufacturing month.

HW Version edit box (ALT+W):

User can edit HW version.

Basic Product Code edit box (read only):

Displays the basic product code.

Save button (ALT+S):

Closes the dialog box and writes HW version and Product code to ME.

Cancel button (ALT+C):

Closes the dialog box and *does not* write HW version nor Product Code to ME.

Help button (ALT+H):

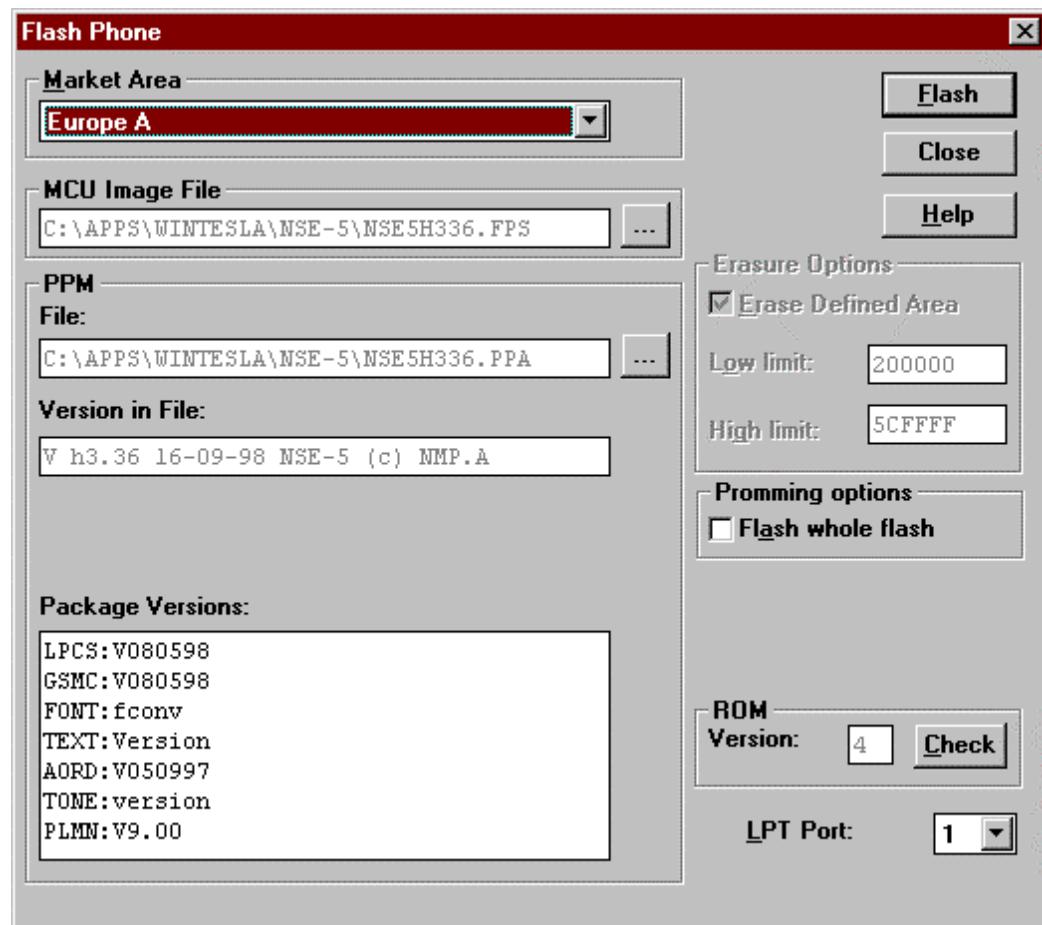
Context sensitive help.

### **Flash Phone... command**

A full set of flash programming boxes and a service battery or the Point Of Sale flash adapter is needed together with the MCU software package including the NSE-5.INI file is needed to perform a flash programming of the phone

Activation	Status Bar Text
Alt, S, F	Flash PPM; Reading from ME...
	Flash Phone; Reading from ME...

This command is used for flashing new software into the phone. Function opens the following **Flash Phone** dialog box. When flashing is started, waiting windows is showed which tells the user approximated flashing time.



Dialog mode: **modal**

Flash dialog has the following items:

Market Area drop list (ALT+M):

Allows the user to select the market the phone is to be used in.

**MCU Image File group:**

Here the selected MCU SW image file is displayed. The... button allows the user to change the file.

**PPM File group:**

Here the selected PPM file is displayed. The... button allows the user to change the file.

**PPM Version in File edit box (read only):**

Display the selected PPM file version.

**PPM Package Versions list box (read only):**

Display the version information the elements included in the PPM file.

**Erasure Options group (read only):**

Display the erase settings used before programming the flash with the selected files.

**Erase Defined Area check box (read only):**

When this checkbox is checked the flash area given by Low limit and High limit will be erased before new files are programmed in the flash.

**Low limit edit box (read only):**

Displays the lower boundary for the flash area to be erased.

**High limit edit box (read only):**

Displays the high boundary for the flash area to be erased.

**Promming options group:**

Enables the user to select the current flash programming mode.

**Flash whole flash check box (ALT+A):**

Enables the user to select whether a complete reprogramming of the flash is to be performed or not. If a complete reprogramming is chosen, all user data, phone alignment, IMEI code and UI settings will be lost. Before a complete reprogramming the flash is erased including the EEPROM. When this checkbox is unchecked only the old MCU SW image file and PPM file is erased before the flash programming commences.

**ROM group:**

Gives the user information on the phone ROM version.

**ROM Version edit box (read only):**

Displays the ROM version of the connected phone.

**ROM Check button (ALT+C):**

Enable the user to force a new reading of the ROM version of the connected phone.

**LPT Port drop list (ALT+L):**

Enables the user to select the parallel port to which the flash programmer is connected.

**Flash button (ALT+F):**

The user is asked if he wants to save User Settings to a file. Then the flash is erased according to the erase settings. Afterwards the flash on the connected phone is programmed with the selected files.

**Close button (ESC):**

Closes the dialog and does not start flash programming.

**Help button (ALT+H):**

Context sensitive help.

After the phone has been programmed the current PC time is set to the phone:



Then the command for setting of the standard user interface settings are activated (refer to the "Restore User Defaults command" chapter).

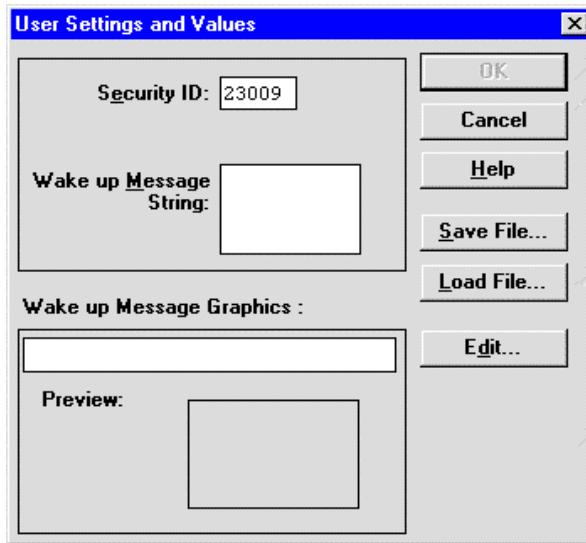
## **Dealer**

The dealer sub menu offers functions for ME settings for dealers.

### **User Settings... command**

Activation	Status Bar Text
Alt, D, U	User Settings and Values; Reading from ME...

This command is used to edit user settings.



When activating this function the user is prompted if he wants to read the user settings and values stored in the phone.

Dialog mode: **modal**

User Settings dialog box has following items:

Save File... button (ALT+S):

User can save user settings to file.

Load File button (ALT+L):

User can load user settings from file.

Edit... button (ALT+D):

Start Windows Paintbrush to edit loaded or saved graphical Wake up message.

Preview picture:

Shows graphical Wake up message.

Ok button (ENTER):  
Writes user settings to phone.

Cancel button (ESC):  
Closes the dialog box

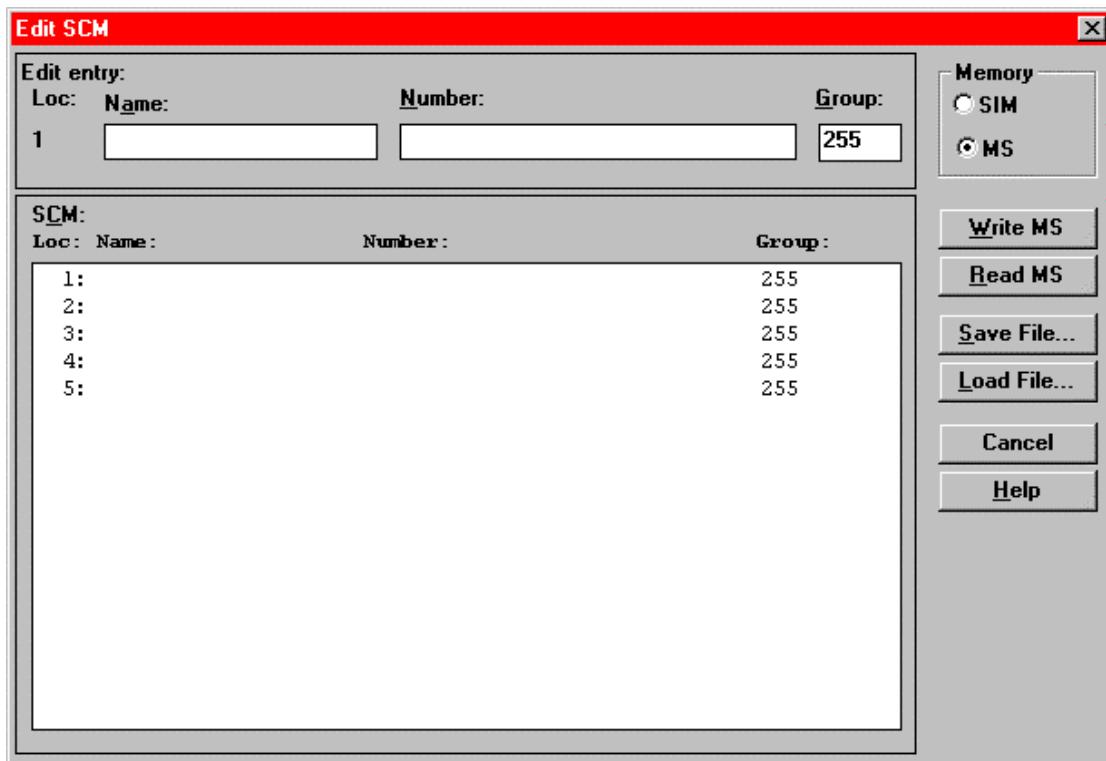
Help button (ALT+H):  
Context sensitive help.

### **Short Code Memory... command**

Activation	Status Bar Text
------------	-----------------

Alt, D, S              Edit SCM; Setting phone to local mode...

This command is used for reading, storing and modifying the SIM/ME SCM values. Function opens the following Edit SCM dialog:



Dialog mode: **modal**

Edit SCM dialog has the following items:

Loc static text:  
Display current location.

Name edit box (ALT+A):  
Edit the Name.

Number edit box (ALT+N):

Edit the Number.

Group edit box (ALT+G):

Edit the Group number.

SCM list box (ALT+C):

List for available names and numbers.

Write button (ALT+W):

Write SCM values to phone and check the validity of names and numbers.

Read button (ALT+R):

Read SCM values from phone.

Save File... button (ALT+S):

Opens a default Windows **File Save As** dialog and asks filename where to save the SCM values. Checks the validity of names and numbers.

Load File... button (ALT+L):

Opens a default Windows **File Open** dialog and asks filename where to load SCM values. Checks the validity of names and numbers.

Cancel button (ESC):

Break waiting states and closes the dialog without writing to phone or SIM card.

Help button (ALT+H):

Context sensitive help.

Memory group box selection:

SCM memory can be defined to ME or SIM.

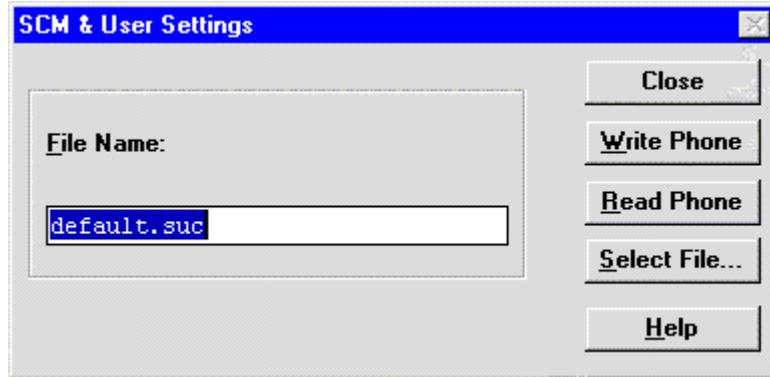
When all values are sent and responses received, waiting window is removed and **Edit SCM** is back in control. The waiting state can be broken with **Cancel** (ESC) button. If writing to the ME is broken, only part of the SCM entries in the ME may be changed.

### **SCM & User Settings... command**

Activation	Status Bar Text
Alt, D, M	SCM & User Settings; Reading data from ME... SCM & User Settings; Writing data to ME...

This command is used to get SCM and user settings from phone to file and vice versa. Following information is loaded/saved with this dialog: all user settings, graphical/text wake up message, SCM, alarms, calendar items and CLI logos and groups

When data is written or read phone waiting dialog is showed to user.



Dialog mode: **modal**

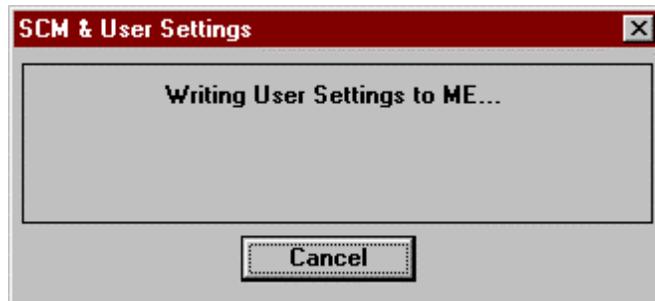
SCM & User Settings dialog box has following items:

File Name edit box (ALT+F):

User can edit file name or select file with the Select File button. When dialog is opened, it contains name of the previously saved or loaded file.

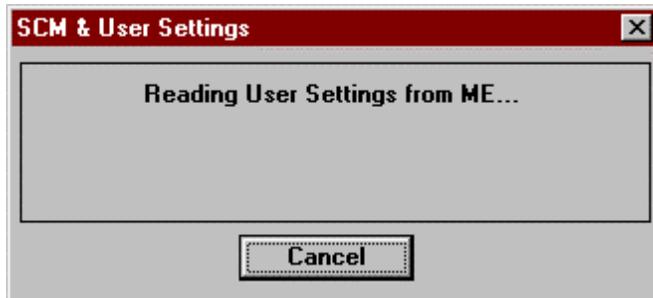
Write Phone button (ALT+W):

Loads settings from file and writes them to phone.



**Read Phone button (ALT+R):**

Reads settings from phone and writes them to file.

**Select File button (ALT+S):**

Opens Open File dialog, with which user can select the file, that contains the data to be loaded to ME or file to which data is saved from ME. If user selects OK button, the name of selected file is copied to File Name edit field.

**Close button (ESC):**

Closes the dialog box.

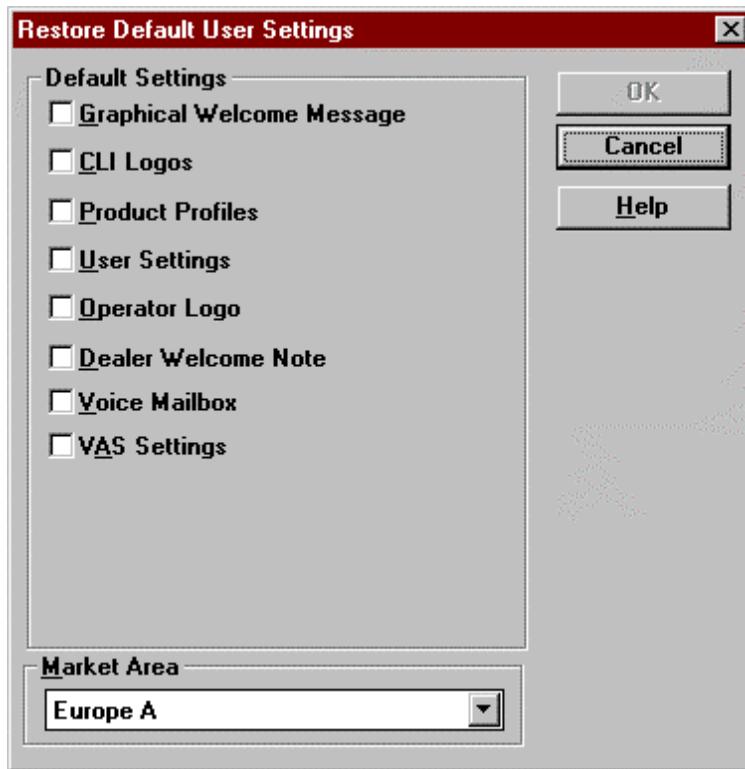
**Help button (ALT+H):**

Context sensitive help.

**Restore User Defaults... command**

Activation	Status Bar Text
Alt, D, R	Initialising local mode...; Setting RF defaults...;

Command is used to restore the user settings of the MS



Dialog mode: **modal**.

Restore Default User Settings dialog has the following items:

Default Settings group:

Contains the possible files and settings to download in the phone.

Graphical Welcome Message check box (ALT+G):

When checked the Wake Up Graphics display is stored in the phone.

CLI Logos check box (ALT+C):

When checked the Calling Line Identification graphic images are stored in the phone.

Product Profiles check box (ALT+P):

When checked the standard product profiles are stored in the phone.

User Settings check box (ALT+U):

When checked the default user settings are stored in the phone.

Operator Logo check box (ALT+O):

When checked the operator logo is stored in the phone.

Dealer Welcome Note check box (ALT+D):

When checked a dealer welcome note is stored in the phone.

Voice Mailbox check box (ALT+V):

When checked the voice mailbox settings are stored in the phone.

VAS Settings check box (ALT+A):

When checked the value added service settings are stored in the phone.

Market Area drop list (ALT+M):

Enables the user to select the market area where the phone is to be used. Depending on what settings are relevant to a market area, the Default Settings check boxes will be enabled. They are all disabled (greyed) as default.

OK button (ENTER):

Stores the selected settings in the phone and closes the dialog.

Cancel button (ESC):

Closes the dialog without storing anything to the phone.

Help button (ALT+H):

Context sensitive help.

### Set UI/DEV Default Values... command

Activation	Status Bar Text
Alt, D, V	Setting UI defaults... Initialising normal mode...

After selection application asks confirmation: "Are you sure you want to set UI to factory settings?". If Yes is answered, default settings are reset to phone.



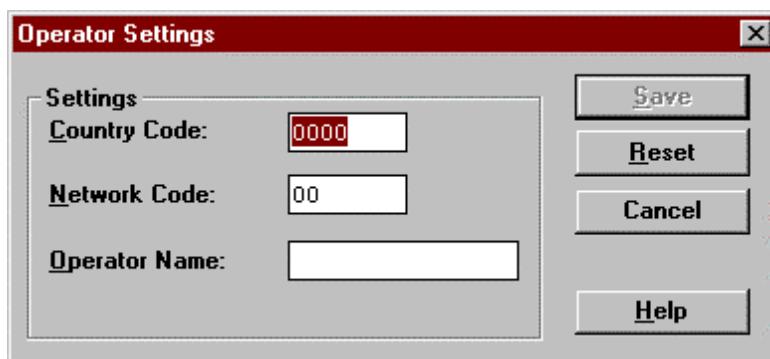
Dialog mode: **modal**

**Flash PPM.....command**

Activation	Status Bar Text
Alt, S, F	Flash PPM; Reading from ME...
See page 78	

**Operator Settings.....command**

Activation	Status Bar Text
Alt, DO	Operator settings: Reading from ME.....
	Command is used to set the operator settings to the MS



Dialog mode: **modal**

Operator Settings dialog has the following items:

Settings group:

Displays the current operator settings.

Country Code edit box (ALT+C):

Allows the user to change the country code.

Network Code edit box (ALT+N):

Allows the user to change the network code.

Operator Name edit box (ALT+O):

Allows the user to change the operator name.

Save button (ALT+S):

Saves the data in the phone and close the dialog.

Reset button (ALT+R):

Reset the data to default values and save them in the phone.

**Cancel button (ESC):**

Close the dialog without saving settings in the phone.

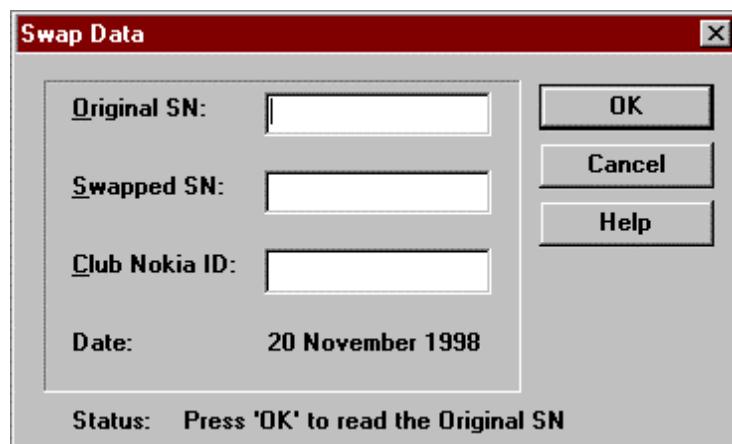
**Help button (ALT+H):**

Context sensitive help.

## IWR Swap Command

Activation	Status Bar Text
Alt, D, I	Scanning for product

Command is used to view and modify swap data on a phone.



Dialog mode: **modal**.

Swap Data dialog has the following items:

**Original SN edit box (read only):**

User can view the connected phones original serial number.

**Swapped SN edit box (read only):**

User can view a possible serial number from this phone when it has replaced another phone in the warranty period.

**Club Nokia ID edit box (ALT+C):**

User can enter the Club Nokia ID.

**Status text:**

Displays information on user actions to be performed or requests currently being serviced.

**OK button (ENTER):**

Reads the phone serial number or saves entered Club Nokia ID.

Cancel button (ESC):

Close the dialog without reading or storing data in the phone.

Help button (ALT+H):

Context sensitive help.

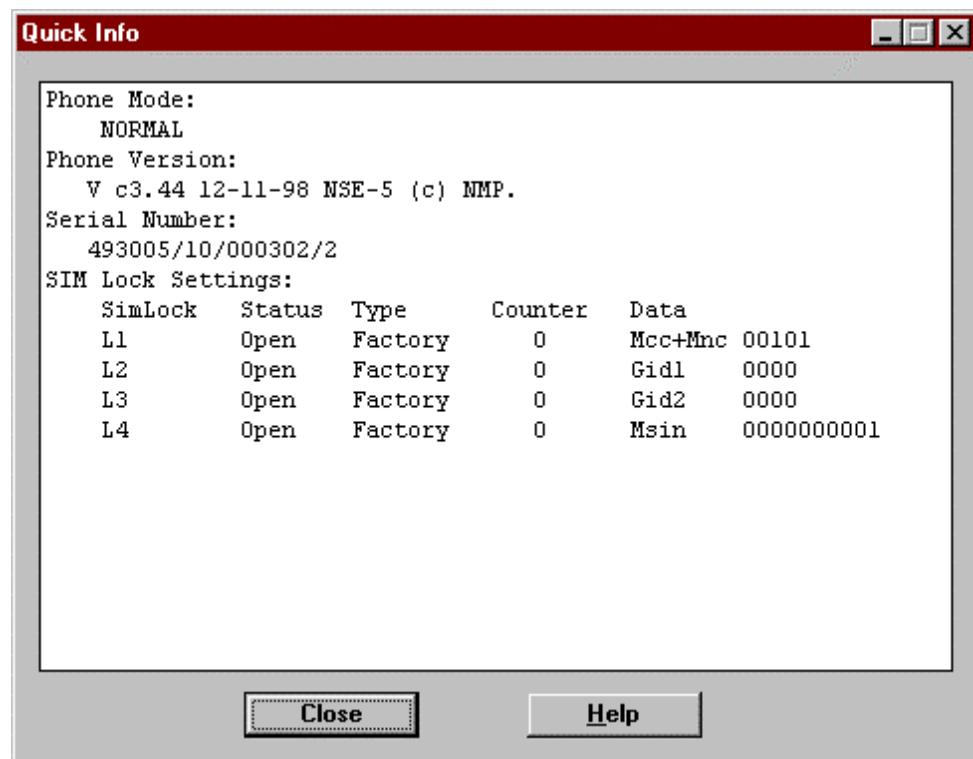
## View

### Quick/RF Info... command

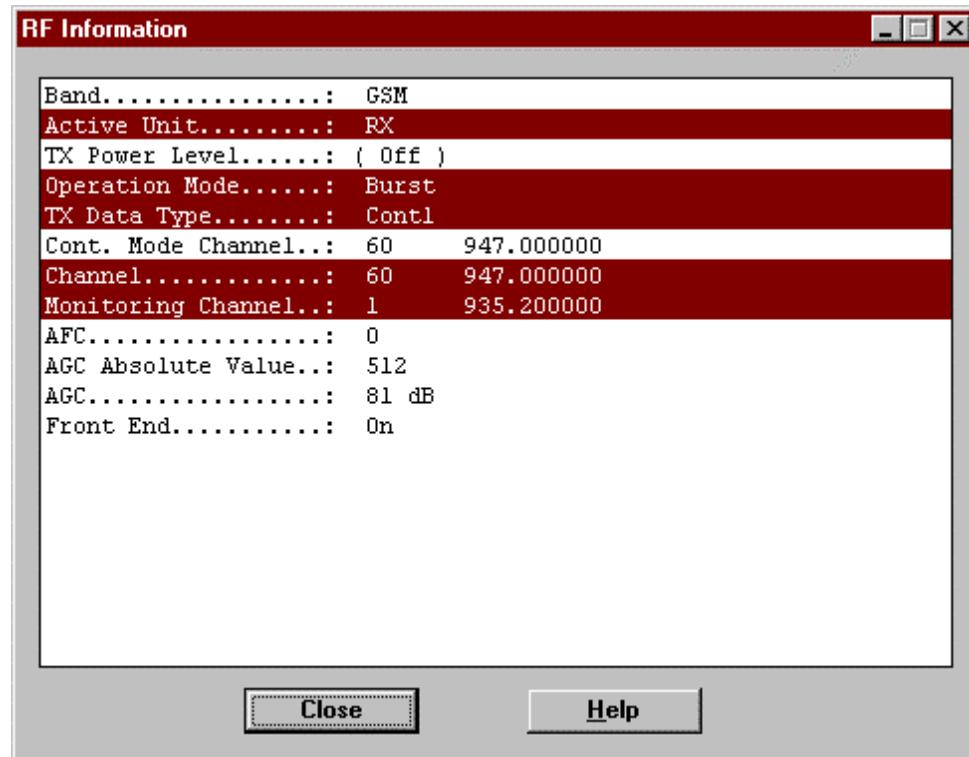
Activation	Status Bar Text
------------	-----------------

Alt, V,Q	View Quick/RF information.
----------	----------------------------

If phone is in *normal* mode following **Quick Info** is shown:

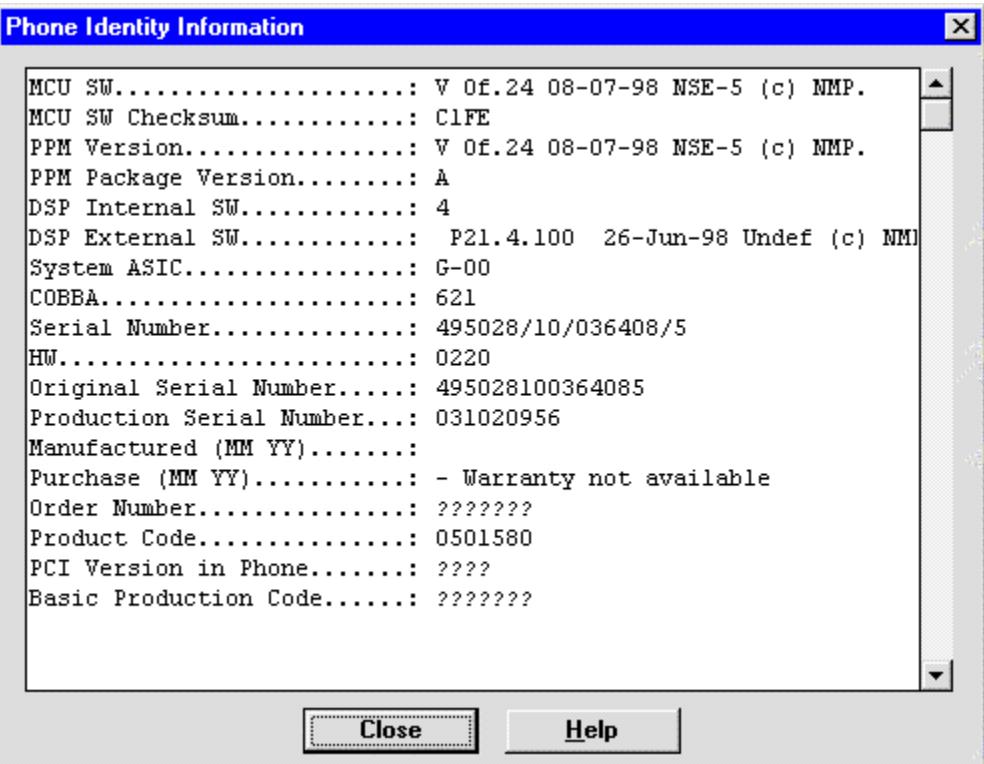


If phone is in local mode following **RF Information** is shown. Information is shown in a modeless dialog which may be left open during other operations. It is also updated when ever needed.



**Phone Identity... command**

Activation	Status Bar Text
Alt, V,P	Phone identity information. Reading from ME...
Command opens <b>Phone Identity Information</b> dialog, which shows identification information. Information is shown in a modeless dialog which may be left open during other operations. It is also updated when ever needed.	



The screenshot shows a Windows-style modal dialog box titled "Phone Identity Information". The main area contains a list of system parameters and their values:

- MCU SW.....: V Of.24 08-07-98 NSE-5 (c) NMP.
- MCU SW Checksum.....: C1FE
- PPM Version.....: V Of.24 08-07-98 NSE-5 (c) NMP.
- PPM Package Version.....: A
- DSP Internal SW.....: 4
- DSP External SW.....: P21.4.100 26-Jun-98 Undef (c) NM
- System ASIC.....: G-00
- COBBA.....: 621
- Serial Number.....: 495028/10/036408/5
- HW.....: 0220
- Original Serial Number.....: 495028100364085
- Production Serial Number....: 031020956
- Manufactured (MM YY).....:
- Purchase (MM YY).....: - Warranty not available
- Order Number.....: ????????
- Product Code.....: 0501580
- PCI Version in Phone.....: ?????
- Basic Production Code.....: ????????

At the bottom of the dialog are two buttons: "Close" and "Help".

## Appendix 1, Vocabulary

Abreviation	Description
ASIC	Custom circuit which for instance controls communication between MCU and DSP
BBD-3	Service battery
CLF	Common Look and Feel
CLI	Calling Line Identification
COBBA	Common Base Band Analog
DATA	DATA interface module
DAU-9S/P	MBUS/FBUS cable
DLL	Dynamic Link Library
DSP	Digital Signal Processor which controls radio interface and speech coding/decoding
EEPROM	Memory for adjustment parameters (Electrically Erasable and Programmable Read Only Memory)
FBUS	Fast serial bus
IMEI	International Mobile Equipment Identification code
IR	Infra Red transmitter
M2BUS	Serial communication bus which can be connected to accessory devices and test PC
MCU	Master Control Unit processor
MDI	MCU DSP Interface; message interface via ASIC registers
ME	Mobile Equipment
MODAL (dialog box)	A modal dialog box requires the user to complete interaction within a dialog box, and close it before continuing with any further interaction outside the window.
MODELESS (dialog Box)	A modeless dialog box allows the user to interact with other windows and applications.
MS	Mobile Station
PC	IBM PS/AT or compatible personal computer
PCI	Phone Controlling Interface SW for PC

PKD-1/1NS/1CS	Hardware protection key (DESKEY DK2) for protecting service software from illegal copying. The software will not work without this key !
RF	Radio Frequency parts
RTC	Real Time Clock
SW	Software
TDF-4	Flash security box
UI	User Interface