

PAMS Technical Documentation

TFE/K-1 SERVICE SOFTWARE INSTRUCTIONS

AMENDMENT RECORD SHEET

| Amendment Number | Date | Inserted By | Comments |
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TFE/K-1 SERVICE SOFTWARE INSTRUCTIONS

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Introduction

General

TFE/K-1 Service Software "WinTesla" is specially designed to facilitate the servicing of first generation WLL terminals.

The software can be used to control the phone according to the user's requirements merely by entering commands via the keyboard / mouse of a PC connected to the phone.

This section refers to Service Software Version 1.4 NMP After Sales will notify service personnel about future upgrades via Technical Bulletins. Software upgrades will be available from your local NMP outlet.

Required Servicing Equipment

- Computer: Intel 386/33 MHz or compatible with one unused serial port (COM1 or COM2*), one parallel port (LPT1), hard disk recommended.
- Operating System: DOS Version 5 & Microsoft Windows 3.1 or later
- Display: VGA based display
- Service Software for 3.5" disk (product code: 0774052) or for 5.25" disk (product code: 0774053) .
- Software Protection Key PKD-1 (product code 0750018)
- M2BUS interface cable DAU-4S (product code 0730057)

*) 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.

Mechanical Connections

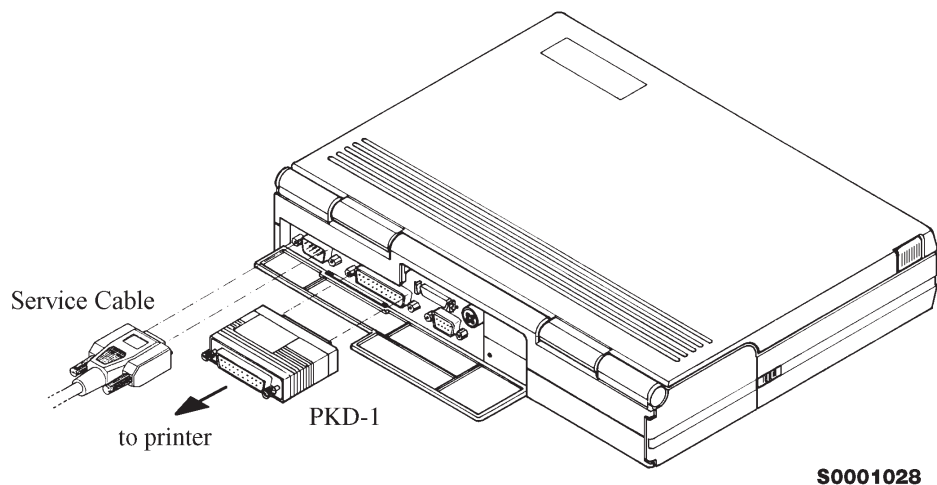
Caution: Ensure that you have switched off the PC and the printer before making connections !

Caution: Do not connect the PKD-1 to the serial port. This could damage the PKD-1 !

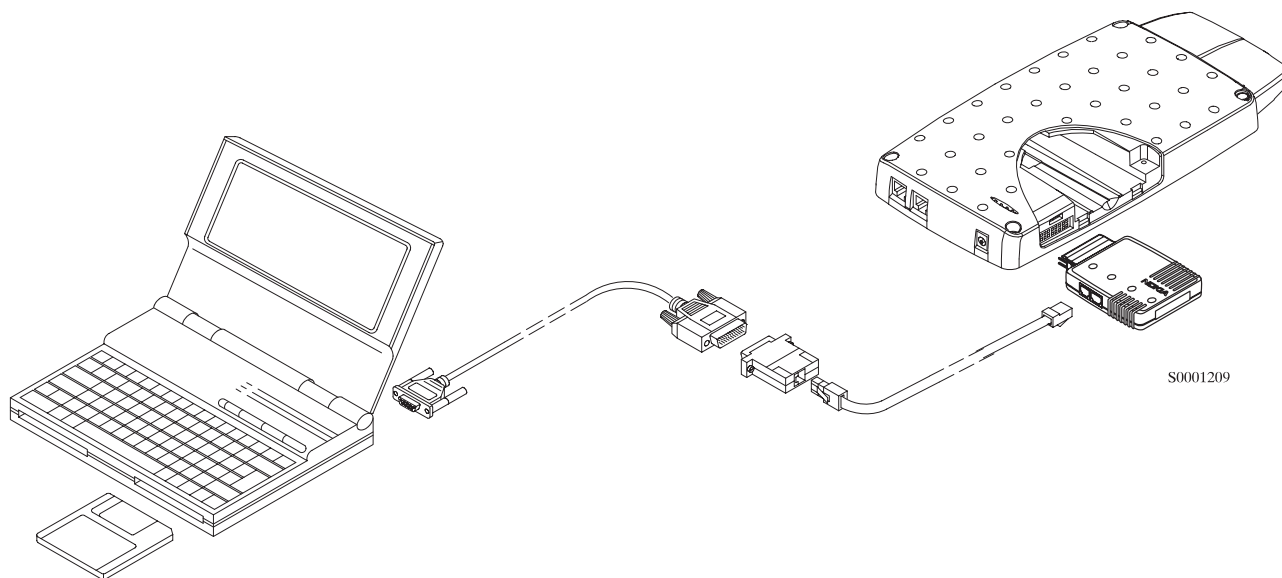
The software controls the phone via a separate adapter connected to the serial port of the PC and to the telephone's M2BUS (DAU-4S and XCM-1).

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.

The PKD-1 should not effect 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.



Attach the DAU-2T PC/MBUS adapter to the PC serial port, using an RS-232 9-pin to 25-pin adapter if necessary. Attach one end of the modular cable XCM-1 to DAU-2T, and the other end to the system connector with the help of the Service Adapter AFW-2.



Install Procedure

Start the phone by connecting the power supply to TFK-1. Switch PC power on. To install software, proceed as follows:

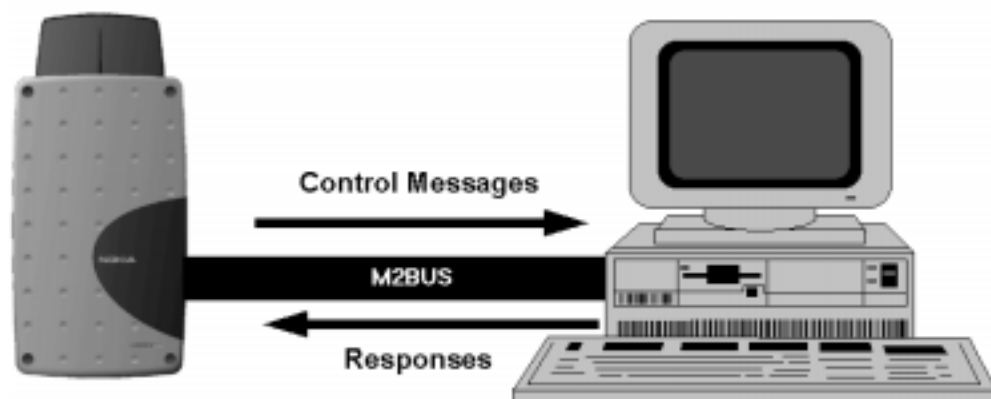
1. If WinTesla has already been installed to PC, jump to step 5.
If not, Insert the WinTesla installation disk into drive A of your PC
2. Start the Installation program: **select File -> Run from Program manager menu, then type A:INSTALL and press OK button**
3. Follow the Installation Software instructions.
4. Restart windows.
5. Remember to install WinTesla at least once before.
Insert the TFE/K-1 DLL installation disk into drive A of your PC.
6. Start Installation program: **select File -> Run from Program manager menu, then type A:INSTALL and press OK button**
7. Follow the Installation Software instructions
8. Start WinTesla by double clicking the WinTesla Icon

Introduction to Service Software Package User Interface

This chapter gives a short description of the Service Software properties.

Service Software Hardware Environment

To run the Service Software, a parallel port software protection device (PKD-1) has to be connected. The user can use the Service Software functions for testing all supported Phone Types. The functions send messages from the PC to the phone, receives results and show them on the PC display. The messages are sent via a low level NMP proprietary bus protocol. An example bus is an M2BUS interface, which needs M2BUS adapter (DAU-2) connected to the PC RS-232 port and special M2BUS cable.



The recommended minimum hardware standard to run the Service Software package is any computer which is 386 33Mhz or greater with at least 4 MB of memory and VGA type display (640x480). This assumes that only the Service Software package is active, i.e. other Windows packages are not running in the background.

Note: if the Service Software is to be run on laptops, the power saving feature MUST be switched off.

Service Software Environment

Service Software user interface is intended for Microsoft Windows 3.1x environment running in enhanced mode. For those who are familiar with Windows environment this application will be easy to use. Detailed information about Windows and application usage can be found from 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. When messages from phone are received, they cause display updating in special display windows. There is always a status bar displayed at the bottom of the main window which contains information about current actions.

Service Software Executables

Only one executable is needed – WinTesla. For TFE/K-1 there are two dlls:

- Functionality DLL is TFEK1.DLL
- User Interface DLL is TFEK1EN.DLL.

Command Line Parameters

There are NO command line parameters.

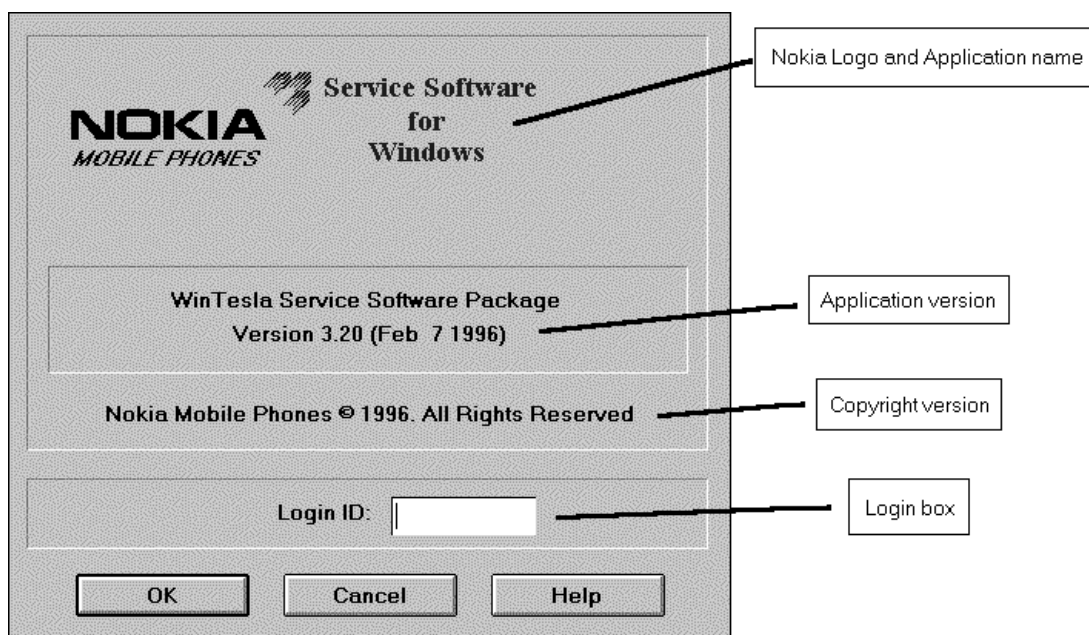
Common Properties of the User Interface

This chapter describes how the User Interface CLF will appear to the user.

The User Interface is capable of being driven without the use of a mouse, as the service engineer rarely has space on the bench to use a mouse.

Login Dialog box

When the Service Software application is invoked, by clicking 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 (-)

User Login ID edit box, where user enters his/her faultlog user name.

OK button (default key)

User name is stored in memory and 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.

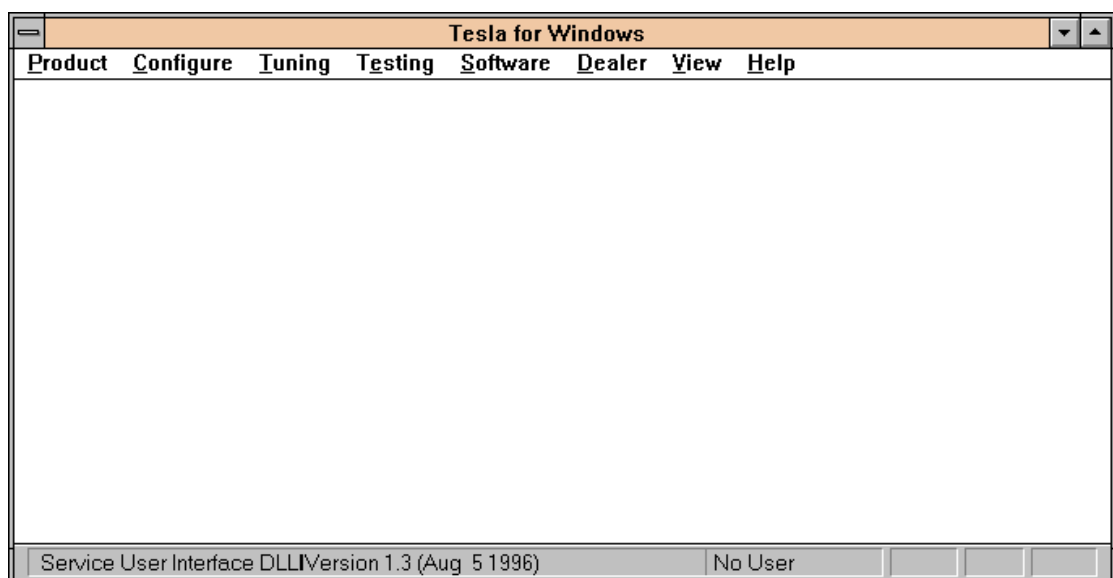
Help button (F1)

Activates the Windows Help application and displays context sensitive Help.

Main Window

The application supports a *Multiple Document Interface (MDI)*. However, the service software interface will present a *Single Document Interface (SDI)* appearance.

Note: MDI is to allow for future expansion, e.g. R&D features.



Title bar

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

A title bar contains the following elements:

- Application Control–menu button
- Maximize button
- Minimize 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 desired menu. In that case, selection is done by pressing *Enter*.

Refer to section 3.3 – Menu bar for a detailed description of the contents of the menu bar.

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 menu selections and events.

The left area of the status bar describes actions of menu items as the user uses the arrow keys to navigate through menus.

The status bar texts are explained in detailed in each of command's description.

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. |

Tool bar

The *tool bar* is NOT defined and will not be implemented until specified by this document.

Menu Bar

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 MUST only contain the follow 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. Any items that are required to be added to a menu lists will be added on the bottom of the appropriate menu section list. If a new item is to be added which is common to two or more phone types, then that menu item will become a common menu item.

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 an OK button before the operation is performed.

Product

The Product menu MUST contain the following menu items:

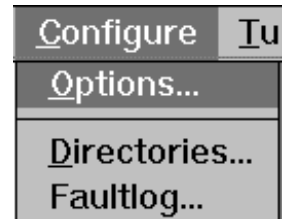
- New Ctrl+R
- Open...
- Close
- Initialize
 - Normal Mode F5
 - Local Mode Shift+F5
- Faultlog
 - Activate Faultlog... F9
 - Edit Faultlog...
- Exit Alt+F4

| <u>P</u> roduct | <u>C</u> onfigure |
|--------------------|-------------------|
| <u>N</u> ew | Ctrl+R |
| <u>O</u> pen... | |
| <u>C</u> lose | |
| <u>I</u> nitialise | ▶ |
| <u>F</u> aultlog | ▶ |
| <u>E</u> xit | |

Configure

The Configure menu MUST contain the following menu items:

- Options...
- Directories...
- Faultlog...
- Phone Type Specific configuration items (where applicable)



Tuning

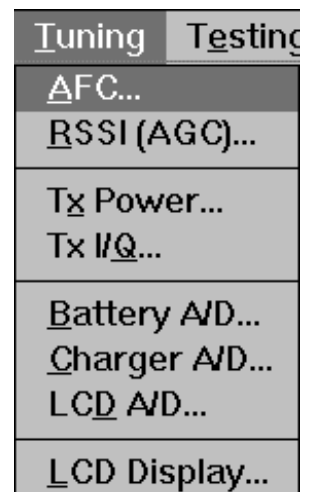
The Tuning menu MUST contain the following menu sections:

- Receiver
- Transmitter
- Voltages
- Phone Type Specific tuning items (where applicable)

An example Tuning menu is shown below:

- AFC...
- RSSI (AGC)...
- Tx Power...
- Tx IQ...
- Battery...
- Charger A/D...
- LCD A/D...
- LCD Display...

Additional menu items may be added within the sections according to the phone type being tuned, e.g. a Charger tuning menu item will be added after the Battery tuning item but not in the Transmitter tuning section.



Testing

The Testing menu MUST contain the following menu sections:

- Quick Tests
- Digital
- User Interface Flexi
- Transmitter
- Receiver
- Automatic Tests
- Phone Type Specific testing items (where applicable)

An example Testing menu is shown below:

- Quick Testing (RF)...
- Self Tests...
- ADC Readings
- Audio
- Display...
- Call Simulation...
- Noise Sensitivity...

Additional menu items may be added within the sections according to the phone type being tested.

Where a menu item consists of more than one test; a pop-up menu may be added to identify the appropriate sub-tests, e.g. there may be two receiver tests required for a particular phone type (Bit Error Rate and RSSI Monitoring). These will be shown as a pop-up from the Receiver menu item.

| | |
|-------------------------------|------------------|
| T esting | S oftware |
| <u>Q</u> uick Testing (RF)... | |
| <u>S</u> elf Tests... | |
| <u>A</u> DC Readings... | |
| <u>A</u> udio... | |
| <u>D</u> isplay... | |
| <u>C</u> all Simulation... | |
| <u>N</u> oise Sensitivity... | |

Software

The Software menu **MUST** contain the following menu sections:

- Phone Identity/Numbers
- Flashing
- Phone Type Specific software items (where applicable)

An example Software menu is shown below:

- Phone Identify
- Start Up Self-Tests...
- Set Default Values...
- Network Settings...
- LA Settings...
- Warranty State...

| |
|--------------------------------------|
| <u>S</u>oftware |
| Phone <u>I</u>dentify... |
| <u>S</u>tart Up Self-tests... |
| Set Default <u>V</u>alues |
| <u>N</u>etwork Settings... |
| <u>L</u>A settings... |
| <u>W</u>arranty State... |

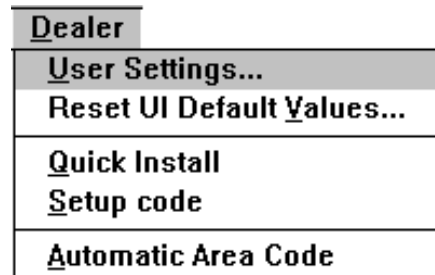
Dealer

The Ddealer menu MUST contain the following menu sections:

- Phone UI Data Editors
- Phone UI Data Transfer
- Phone Re-Initialization Functions
- Subscriber Data
- Phone Type Specific dealer items (where applicable)

An example Ddealer menu is shown below:

- User Settings
- Reset UI Default Values
- Quick Install
- Setup code
- Automatic Area Code



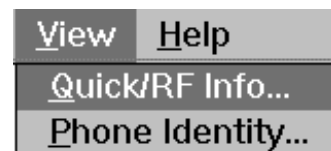
View

The View menu MUST contain the following sections:

- Service Windows
- Production Windows (where applicable)
- R&D Windows (where applicable)

An example View menu is shown below:

- Quick RF Info...
- Phone Identity...



Phone Identity Window

The Phone Identity window should contain, as a minimum, the following data:

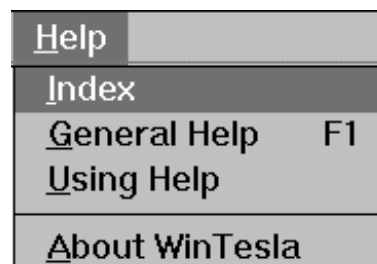
- Software Version(s)
- Hardware Version(s)
- Serial Number(s)
- Product Code

This window will only be used as a display window and therefore will not allow editing of the displayed data. This window will not contain any controls other than a scroll bar.

Help

The Help menu MUST contain the following menu items:

- Index
- General Help
- Using Help
- About WinTesla



Mouse Cursors

The standard Windows pointer will be used as the mouse cursor.

During time consuming tasks e.g. communication to phone, an hour glass will be shown informing the user that a task is in progress. The application uses the hour glass cursor to inform user that 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 specified by this document.

Short Cut Function Keys

| Key | Description | Defined by |
|----------|------------------------|------------|
| F1 | Context Sensitive Help | Microsoft |
| F5 | Normal Mode | NMP |
| Shift+F5 | Local Mode | 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 | <u>F</u> ile – <u>N</u> ew | Microsoft |
| Ctrl+O | <u>F</u> ile – <u>O</u> pen | Microsoft |
| Ctrl+P | <u>F</u> ile – <u>P</u> rint | Microsoft |
| Ctrl+R | <u>P</u> roduct – <u>N</u> ew | NMP |

Shift Hot Keys

| Key | Description | Defined by |
|----------|-------------|------------|
| Shift+F5 | Local Mode | NMP |

Key Strokes

| Key | Description | Defined by |
|-----------|---------------------------|------------|
| Alt+P | <u>P</u> roduct Menu | NMP |
| Alt+P,N | <u>N</u> ew | NMP |
| Alt+P,O | <u>O</u> pen | NMP |
| Alt+P,C | <u>C</u> lose | NMP |
| Alt+P,I | <u>I</u> nitialize Pop-up | NMP |
| Alt+P,I,N | <u>N</u> ormal Mode | NMP |
| Alt+P,I,L | <u>L</u> ocal Mode | NMP |
| Alt+P,F | <u>F</u> aultlog Pop-up | NMP |
| Alt+P,F,A | <u>A</u> ctivate Faultlog | NMP |
| Alt+P,F,E | <u>E</u> dit Faultlog | NMP |
| Alt+P,E | <u>E</u> xit Application | NMP |
| Alt+C | <u>C</u> onfigure | NMP |
| Alt+C,O | <u>O</u> ption | NMP |
| Alt+C,D | <u>D</u> irectories | NMP |
| Alt+C,F | <u>F</u> aultlog | NMP |
| Alt+T | <u>T</u> uning Menu | NMP |
| Alt+T,A | <u>A</u> FC | NMP |
| Alt+T,R | <u>R</u> SSI(AGC) | NMP |
| Alt+T,X | <u>T</u> x Power | NMP |

Service Software Instructions

Technical Documentation

| | | |
|---------|---------------------------------|-----------|
| Alt+T,Q | Tx I/Q | NMP |
| Alt+T,B | B <u>attery</u> | NMP |
| Alt+T,C | <u>C</u> harger | NMP |
| Alt+T,D | L <u>C</u> D A/D | NMP |
| Alt+T,L | <u>L</u> CD Display | NMP |
| Alt+E | T <u>e</u> sting Menu | NMP |
| Alt+E+Q | <u>Q</u> uick Testing (RF) | NMP |
| Alt+E,S | <u>S</u> elf Tests | NMP |
| Alt+E,A | <u>A</u> DC Readings | NMP |
| Alt+E,U | A <u>u</u> dio and Line Adapter | NMP |
| Alt+E,L | <u>L</u> eds | NMP |
| Alt+E,D | <u>D</u> isplay | NMP |
| Alt+E,C | <u>C</u> all Simulation | NMP |
| Alt+E,N | <u>N</u> oise Sensitivity | NMP |
| Alt+S | <u>S</u> oftware Menu | NMP |
| Alt+S,I | Phone I <u>de</u> ntity | NMP |
| Alt+S,S | <u>S</u> tart-up Self Tests | NMP |
| Alt+S,V | Set Default <u>V</u> alues | NMP |
| Alt+S,N | <u>N</u> etwork Settings | NMP |
| Alt+S,L | <u>L</u> A Settings | NMP |
| Alt+S,W | <u>W</u> arranty State | NMP |
| Alt+D | <u>D</u> ealer Menu | NMP |
| Alt+D,U | <u>U</u> ser Settings | NMP |
| Alt+D,V | Reset UI Default <u>V</u> alues | NMP |
| Alt+D,Q | <u>Q</u> uick Install | NMP |
| Alt+D,S | <u>S</u> etup code | NMP |
| Alt+D,A | <u>A</u> utomatic Area Code | NMP |
| Alt+V | <u>V</u> iew Menu | NMP |
| Alt+V,Q | <u>Q</u> uick/RF Info | NMP |
| Alt+V,P | <u>P</u> hone Identity | NMP |
| Alt+H | <u>H</u> elp Menu | Microsoft |
| Alt+H,I | <u>I</u> ndex | Microsoft |
| Alt+H,G | <u>G</u> eneral Help | Microsoft |
| Alt+H,U | <u>U</u> sing Help | Microsoft |

Alt+H,A

About WinTesla

Microsoft

Help Functions

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

The context sensitive help is activated with **F1**-key. Help contains also Using Help, which describes how to use the help facility. Refer to the Windows manual for a detailed description of 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 will be common.

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

All dialog box will contain the following entities:

- Help button
- Title bar
- At least one button other than Help
- Application Control–menu Button

Common Dialog boxes

This sections describes the common dialog boxes to be used in the Service Software package, and the context in which they will be used.

Note Message Box

When the user has made illegal selection a *note message box* dialog box will be opened and message text is displayed. A message box is also opened when the program has some information for the user. The size of the dialog box may vary. An information dialog box is recognized by the **!**-icon.



Dialog boxes will also contain an OK button and a Help button.

OK button (default key):

Acknowledge displayed information and continue. The Dialog box is closed after selection.

Help button (Alt+H):

Opens context sensitive help as F1-key does.

Query Message Box

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



Dialog boxes will also contain a Yes button, a No button, and a Help button.

Yes button (Alt+Y or Y) (default key):

Accepts confirmation or question.

No button (Alt+N or N):

Denies confirmation or question.

Help button (Alt+H):

Opens context sensitive help as F1-key does.

The buttons may also be OK and Cancel. The operation of these buttons are same as in a Note dialog box.

Error Message Box

Error message box dialog boxes use a Stop-icon. When a “Stop”-dialog box is displayed, current operation is terminated.

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



Dialog boxes will also contain an OK button and a Help button.

OK button (default key):

Acknowledge displayed information and terminate current operation. The Dialog box is closed after selection.

Help 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 in section 3.8 – Buttons. However, it is recognized that features may require additional button types, but the addition of these non-standard buttons should be carefully considered to minimize any inconsistencies between implementations.

The buttons will be 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 dialog boxes 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 should be limited and carefully considered. The use of radios buttons defines the number of possible choices available to the user, which may be acceptable for one project, but not for another.

Buttons

All buttons must be the Microsoft style of buttons.

In general, the default button will be the OK 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.

OK button:

Accept and validate entered settings and values and closes the dialog box. If the values have not been changed, then no action will be taken. The status bar will reflect the status. The user should only be queried, if the settings or values accepted will over-write data that CANNOT be reproduced.

A greyed **OK** 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 box. The Close button is only used for dialog boxes 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):

Open context sensitive help as F1-key does.

Reporting Status

The status bar will be 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 will be 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.

TFE/K-1 Specific Features

Menu Bar

TFE/K-1 Service software's menus adopt the menu structure specified by CLF.

Product

New command

| Activation | Status Bar Text |
|---------------------|--------------------|
| Alt, P, N Ctrl+R | Rescan a new phone |

This command scans a new product/phone. When a phone is found, a product specific functionality module is loaded. If no phone or wrong phone/cellular type is detected, functionality is unloaded and the user is informed.

This function is also called automatically when application is started. The user can also specify a regular poll which enables the WinTesla application to scan the new phone periodically. If the phone is still the same, no changes are made. If the phone has changed (with same phone type only serial number is changed), the phone will be initialized in normal mode. If the phone has changed to a different phone type, the current dlls are unloaded and new ones are loaded for that phone.

The initialization routine checks a phone's cellular type (GSM/PCN), and if an unsupported phone is detected, the WinTesla application does not load the dlls.

If quick info view is open, the window will be automatically updated.

If phone identification view is open, the window will be automatically updated.

Open... command

| Activation | Status Bar Text |
|------------|---|
| Alt, P, O | Force load phone specific functionality |

Enables the user to force load a specific phone's WinTesla dll's.

Close command

| Activation | Status Bar Text |
|------------|-----------------------------|
| Alt, P, C | Closes loaded functionality |

Closes the loaded functionality, and sends reset to the phone if dll's are loaded by the Open command.

Initialize command

| Activation | Status Bar Text |
|------------|-----------------|
| Alt, P, I | – |

Opens a submenu which contains the following options:

Normal Mode

| Activation | Status Bar Text |
|--------------------|----------------------------------|
| Alt, P, I, N F5 | Initializes phone to normal mode |

When normal mode has been activated, or the program has been started, self-test results will be asked from the 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.

The initialization routine checks the phone's cellular type (GSM/PCN), and if an unsupported phone is detected, the application unloads the dll's.

If the phone identification view is open, window will be automatically updated. Also if the RF Information Window is open, it will be updated to Quick Info view.

Local Mode

| Activation | Status Bar Text |
|--------------------------|---------------------------------|
| Alt, P, I, L Shift+F5 | Initializes phone to local mode |

This selection will change the MS state to *local*. When local mode is selected, the phone is controlled in the local mode so that special actions can be made (for example RF tunings).

Faultlog

| Activation | Status Bar Text |
|------------|-----------------|
| Alt, P, F | – |

Opens a submenu which contains following options:

Activate Faultlog...

| Activation | Status Bar Text |
|--------------------|------------------------|
| Alt, P, F, A F9 | Activates faultlogging |

Edit Faultlog...

Activation

Status Bar Text

Alt, P, F, E

Activates faultlog editing

Exit command

Activation

Status Bar Text

Alt, P, X

Exit application

Alt+F4

Double-click the application's
Control Menu button

This command ends the Service Software session.

Configure**Options... command**

Activation

Status Bar Text

Alt, C, O

Edit Service Software options

The **Options** dialog box contains the following items:

Language drop down list:

Current password edit box:

New Password edit box:

Retype Password edit box:

User ID edit box.

M2BUS Com Port drop down list.

Automatic Rescan edit box.

Directories... command

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

| | |
|-----------|-------------------------|
| Alt, C, D | Edit directory settings |
|-----------|-------------------------|

The **Directories** dialog box contains the following items:

ID Data edit box:

Logs edit box:

Fault log file(s) edit box:

Data Validation file(s) edit box:

Flash images edit box:

Blow failures edit box:

Faultlog... command

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

| | |
|-----------|------------------------|
| Alt, C, F | Edit faultlog settings |
|-----------|------------------------|

The **Faultlog** dialog box contains the following items:

Faultlog enabled/disabled radio buttons:

Allow Manual Entry enabled/disabled radio buttons:

Automatic fault log prompting Enabled 1/Disabled 2 radio buttons:

Station identity edit box:

Country of Repair edit box:

Warranty period months edit box / drop down list:

Maximum Time to repair edit box:

Tuning

The tuning menu offers functions for ME adjustments.

AFC... command

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

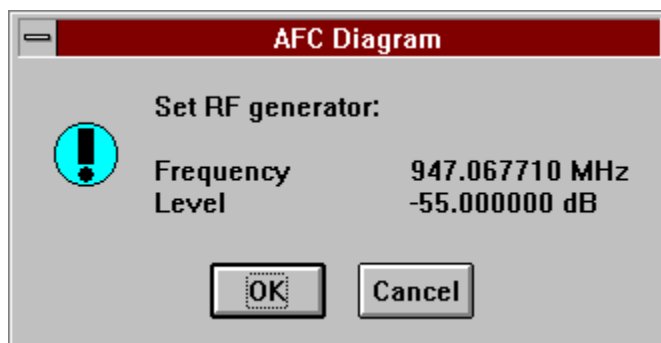
| | |
|-----------|---------------------------------------|
| Alt, T, A | Open an AFC diagram dialog box |
|-----------|---------------------------------------|

Starts AFC tuning.

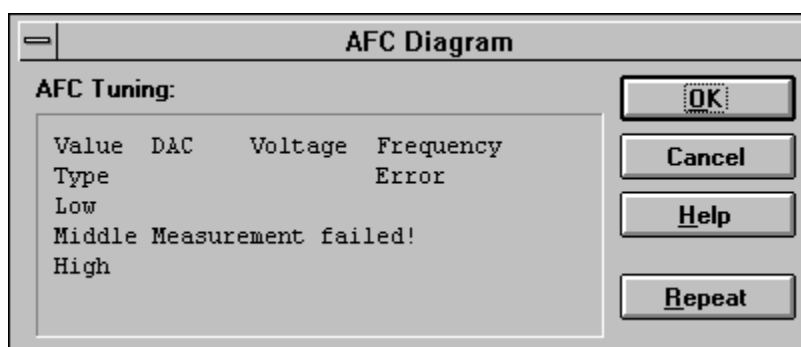
The following selections are automatically made when this tuning function is activated:

- Active Unit = RX
- Operation mode = Continuous
- Update RF Information window

Before tuning is started, the user is requested to set the signal generator to a specified input level (read from .INI file).



The **AFC Diagram** dialog box will open when user accepts request:



The **AFC Diagram** dialog box contains the following items:

Repeat button (Alt+R):

The measurement can be started again by pressing Repeat button.

OK button (Alt+O):

The dialog box is closed, and tuning *is saved* to phone.

Cancel button (Esc):

The dialog box is closed, and tuning *is not saved* to phone.

The D/A converter range (DAC) is from +1023 to -1024, and the voltage range is from 0.3 V to 3.9 V (voltage precision is 0.01 V).

The frequency error range is from -134 kHz to +134 kHz, with precision of 0.1 kHz. The result is rounded to the closest value.

When the function is exited, the following selections are set to the values which were selected before this adjustment.

Active Unit

Operation mode

Update RF Information window

Also AFC is set to the previous value when exiting from this function.

RSSI (AGC)... command

Activation

Status Bar Text

Alt, T, R

Open **RSSI Calibration** dialog box

Starts RSSI calibration.

The following selections are automatically made when this tuning function is activated:

Active Unit = RX

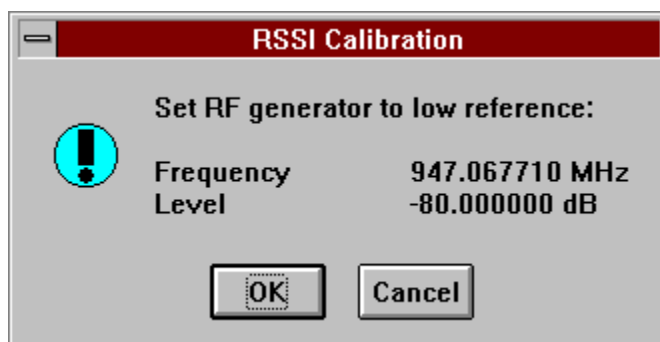
Operation Mode = Continuous

Update RF Information window

The measurement is started automatically when RSSI calibration is entered.

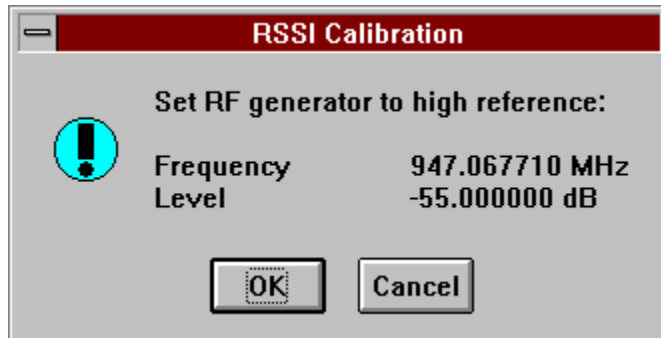
The measurement is done in five steps:

1. The user is requested to set the signal generator to low input level (read from .INI file).



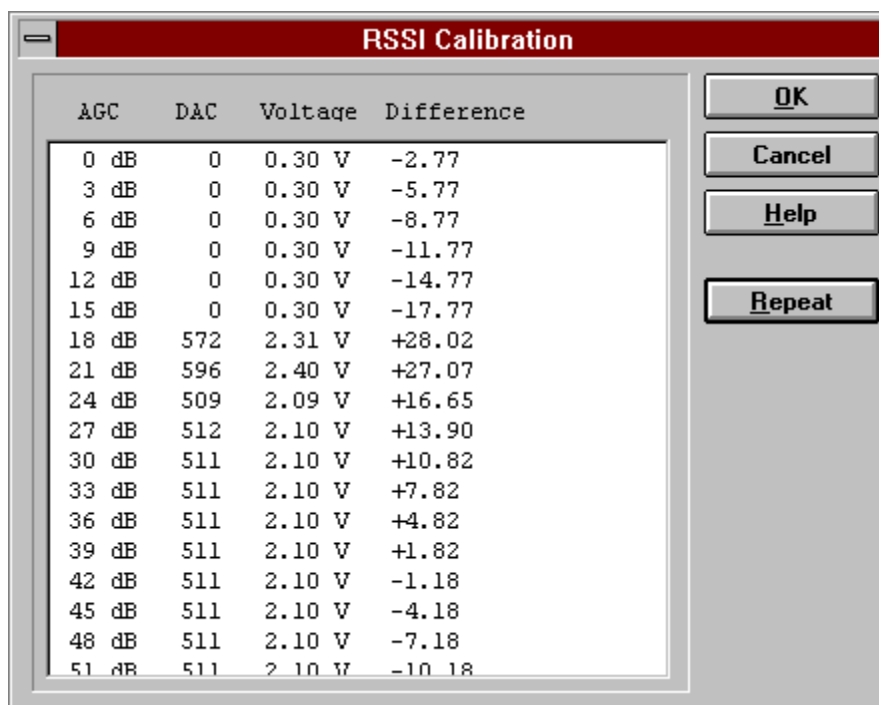
2. Measurement with low input level is executed

3. The user is requested to set the signal generator to high input level (read from .INI file).



4. Measurement with high input level is executed

5. The **RSSI Calibration** dialog box will be updated when the previous steps are done.



The **RSSI Calibration** dialog box contains the following items:

AGC List box (Alt+A):

Gain code DAC can have values from 0 to 1023 and voltage from 0.26 V to 3.86 V (voltage precision is 0.01 V). Note that the needed input signal level is also shown.

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 the phone.

Repeat button (Alt+R):

The measurement can be started again by pressing this button.

OK button (Alt+O):

The dialog box is closed, and tuning *is saved* to the phone.

Cancel button (Esc):

The dialog box is closed, and tuning *is not saved* to the phone.

When calibration is ended, the DAC value checking is performed, and if it is not successful, an error message is shown. The test checks if all DAC values are in the same order as AGC values in the table.

When the function is exited, the following selections are set to the values which were selected before this adjustment.

Active Unit

Operation Mode

Update RF Information window

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

TX Power... command

Activation

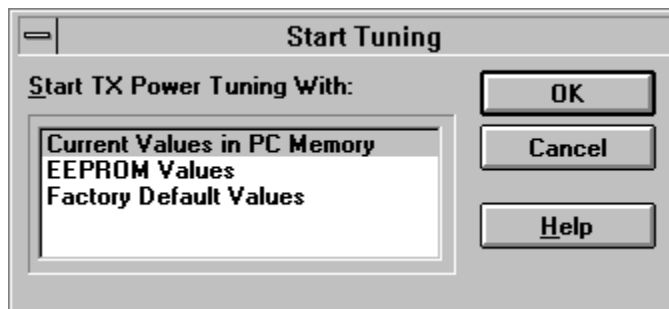
Status Bar Text

Alt, T, X

Open **TX Power Tuning** dialog box

Starts TX power tuning.

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



The **Start Tuning** dialog box contains the following items:

Start Tuning With list box (Alt+S):

Current Values in PC memory

Tuning values are load from program's internal memory.

EEPROM Values

Tuning values are load from ME's EEPROM.

Factory Default Values

Tuning values are load from ME's flash.

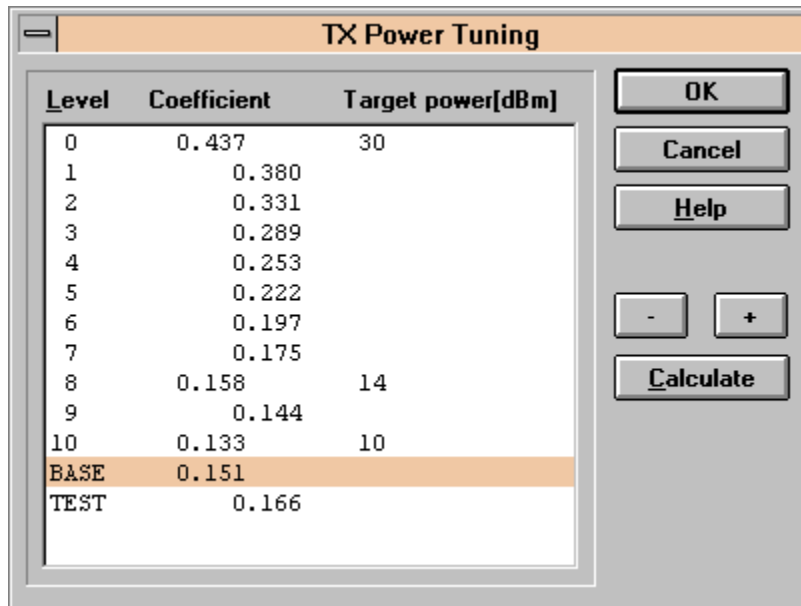
The following selections are made automatically when this tuning function is activated:

Active Unit = TX

the BASE power level is selected

Operation mode = Burst

The **TX Power Tuning** dialog box will be activated automatically after value selection:



The **TX Power Tuning** dialog box contains the following items:

Power Level & Coefficients list box (Alt+P):

The power is presented in GSM values (5..15) or PCN values (0...10). The base power is selected automatically when the dialog box is opened. The test value is reset to 0.035 when the program is started. 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 the tuning function is activated again later.

If there are more power levels in the phone that can fit into the window, the window is scrollable. When the phone is initialized, the program asks for the number of power levels used in the phone.

Only four power coefficients (BASE, biggest, third smallest, and smallest) are needed to tune, 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+C):

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

+/- buttons (+/-):

The + and – buttons will cause power changes in 0.25dB steps (The D/A converter control value ratio is 1.0292). When these keys are used, the coefficient value is updated in the tuning window.

OK button (Enter):

The dialog box is closed, and tuning *is saved* to phone.

Cancel button (Esc):

The dialog box is closed, and tuning *is not saved* to phone.

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

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

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

Because the stored power level range is larger than the number of used power levels, the unused levels should be set to the nearest possible power level. (For example in GSM the levels 2–4 are not used so they are set to the same value as level 5).

The following is selected automatically when this tuning function is ended:

Active Unit = RX

TX I/Q... command

| Activation | Status Bar Text |
|------------|--------------------------------------|
| Alt, T, Q | Open TX I/Q Tuning dialog box |

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

The function opens the same **Start Tuning** dialog box as TX Power Tuning.

The following selections are made automatically when this tuning function is activated:

Active Unit = TX

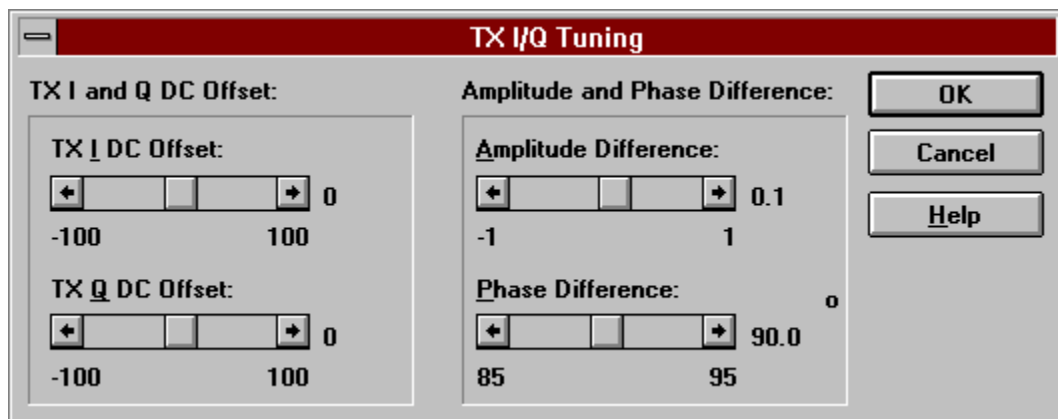
Operation Mode = Burst

TX Power Level = 10(GSM); 5(PCN)

If TX Data Type = RANDOM => TX Data Type = 1

Update RF Information window

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



The **TX I/Q Tuning** dialog box contains the following items:

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

The DC Offset is shown as percent (%) from the \pm maximum value. 0% means that there is no DC. The value range is $-100\% \dots +100\%$. 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 above, except with this selection the Q branch DC Offset is tuned. The value range is $-100\% \dots +100\%$. The value is rounded to the nearest integer value.

Tune Amplitude Difference scroll bar (Alt+A):

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

Tune Phase Difference scroll bar (Alt+P):

When this selection is made, the user can increase or decrease the phase difference in 0.5° steps. The current phase difference is shown in the tuning window with numbers and bar figure. The value range is 85...95.

OK button (Enter):

The dialog box is closed, and tuning *is saved* to phone.

Cancel button (Esc):

The dialog box is closed, and tuning *is not saved* to phone.

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

The following are automatically selected when the TX I / Q tuning function is ended:

Active Unit = RX

Update RF Information window

Testing

The Testing sub-menu offers functions for ME testing.

Quick Testing (RF)... command

Activation

Status Bar Text

Alt, E, Q

Open **Quick Testing** dialog box

This function is used for quick RF testing.

The command opens the **Quick Testing** dialog box, which contains data for testing and adjustments.

The **Quick Testing** dialog box contains the following items:

Active Unit group:

RX radio button (Alt+R):

When *RX* is selected, the following selections are made:

Data transmission is deactivated

TX power is deactivated

If 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! The function is activated immediately, Apply is not needed.

TX radio button (Alt+T):

When *TX* is selected, the following selections are made:

Data transmission is activated

If operation mode is continuous, TX continuous mode channel is activated

If operation mode is burst, TX power is activated

RF Information window is updated

Note! The function is activated immediately, Apply is not needed.

Operation Mode group:

Continuous radio button (Alt+C):

When *continuous* selection is used:

the synthesizer is set to constant frequency.

the synthesizer channel number is as given with Continuous Mode Channel selection

if Active Unit is TX, data (selected with TX Data Type) is sent

transmitter power is not connected

if Active Unit is RX, AGC is controlled

Note! The function is activated immediately, Apply is not needed.

Burst radio button (Alt+B):

When *burst* selection is used,

the synthesizer is controlled by using GSM/PCN receiving/transmission/measuring synthesizer control sequence

the synthesizer 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! The function is activated immediately, Apply is not needed.

TX Data Type drop list (Alt+D):

This list changes the transmission data type, and consists the following options: 0, 1, and Random. After Random data selection 0 is used. If Operating Mode is *continuous*, TX Data Type Random causes different data sending than in burst mode (**see /1/**).

TX Power Level edit box (Alt+T):

With this value is possible to change the transmission power. The user can give the needed GSM/PCN power value (5..15/0...10) 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 or transmission power as GSM or PCN value. When the TX power is tuned with test value (smallest value) the TX Power has value *TEST*.

Channel edit box (Alt+H):

The user can enter here the channel number that is used for both transmission and receiving. The frequency of the selected channel is shown after selection.

Monitoring Channel edit box (Alt+M):

This field selects neighbour monitoring channel. The frequency of the selected channel is shown after selection.

Continuous Mode Channel edit box (Alt+C):

To this edit box the user can enter the continuous mode channel which may have all GSM channel numbers (1..124) or PCN channel numbers (512...885).

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

AGC edit box (Alt+G):

This selection allows user to edit the AGC absolute value (value from A/D converter). The AGC can have values from 0 dB to 93 dB in 3dB steps in GSM, and from 0 dB to 81 dB in PCN.

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

RSSI Calibration

AFC Diagram

AFC edit box (Alt+F):

This selection allows user to edit the AFC D/A converter value. The AFC can have values from -1024 to 1023.

The AFC value is the last time in the normal mode measured AFC D/A converter value (11 bit 2-complement value is used with decimal digits). If AFC results are not obtained, no text is shown. Neither is the AFC value shown in the following situations i.e. when AFC is not controlled by PC:

AFC Diagram

Apply button (Alt+A):

Accepts entered values and validates them. After validation, the application sends corresponding messages to ME. Closes the dialog box, 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 current values as default Quick Test values.

Get Defaults button (ALT+G):

Gets default Quick Test values as current values.

The following are automatically selected when the Quick testing function is ended:

Active Unit = RX

Update RF Information window

The next table shows the dialog box's properties in 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

OPERATION MODE = CONT.:

TX Power Level: OFF, Greyed

Continuous Mode Channel: Updated

Channel: Greyed

ACTIVE UNIT = RX:

TX Data Type: Greyed

TX Power Level: OFF, 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

Self Tests... command

Activation

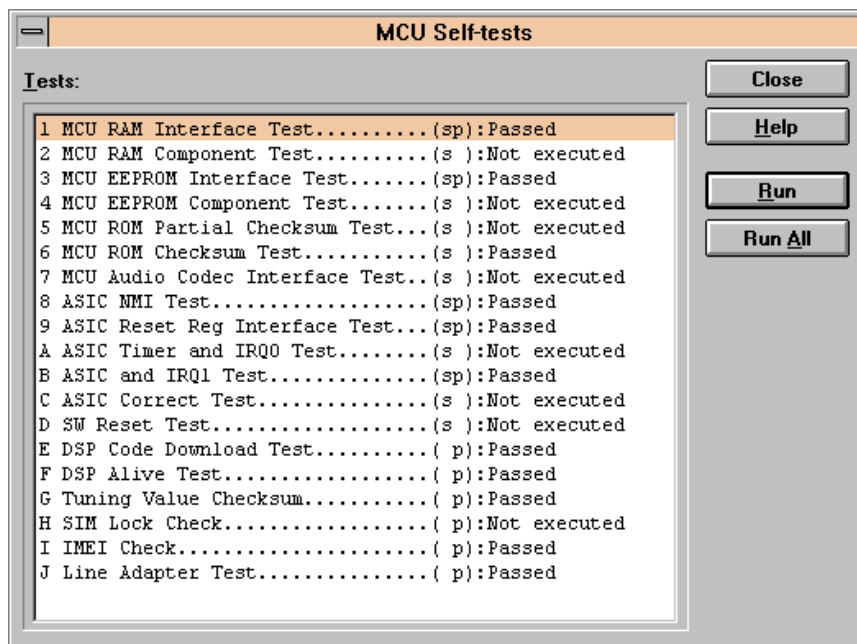
Status Bar Text

Alt, E, S

Open **MCU Self-tests** dialog box

This 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 in the **MCU Self-test** dialog box.



The **MCU Self-test** dialog box contains the 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)" in the screen example means that the test can be run separately.

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

Passed

Failed

No response

Not executed

RUNNING...

Run button (Alt+R):

The user can select the desired test from list and hit the **Run** button. When the user selects a test to be run, the text *RUNNING...* is shown in test state field, and the 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, an *error message box* will be shown, and the test state is changed to *No response*.

Run All button (Alt+A):

The 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 the state field is updated, the application moves to next test, and repeats previous cycle.

Supported Self Tests

The following tests are available:

- | | |
|----------------------------------|---|
| 1 MCU RAM Interface Test | : |
| 2 MCU RAM Component Test | : |
| 3 MCU EEPROM Interface Test | : |
| 4 MCU EEPROM Component Test | : |
| 5 MCU ROM Partial Checksum Test | : |
| 6 MCU ROM Checksum Test | : |
| 7 MCU Audio Codec Interface Test | : |
| 8 ASIC NMI Test | : |
| 9 ASIC Reset Reg Interface Test | : |
| A ASIC Timer and IRQ0 Test | : |
| B ASIC and IRQ1 Test | : |
| C ASIC Correct Test | : |
| D SW Reset Test | : |

| | |
|--------------------------|---|
| E DSP Code Download Test | : |
| F DSP Alive Test | : |
| G Tuning Value Checksum | : |
| H SIM Lock Check | : |
| I IMEI Check | : |
| J Line adapter test | : |

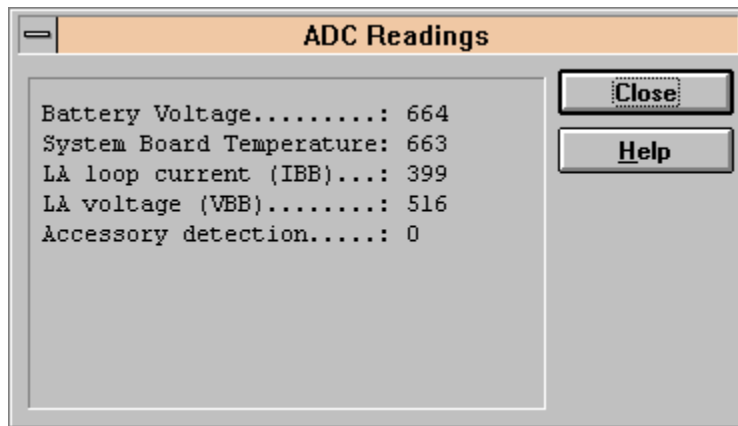
ADC Readings... command

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

| | |
|-----------|-------------------------------------|
| Alt, E, A | Open ADC Readings dialog box |
|-----------|-------------------------------------|

This command is used to read and show A/D values from the phone.

The command opens the **ADC Readings** dialog box.



The **ADC Readings** dialog box contains the static text fields, where measurements are updated to the window once a second.

A/D Readings

The following a/d readings are measured:

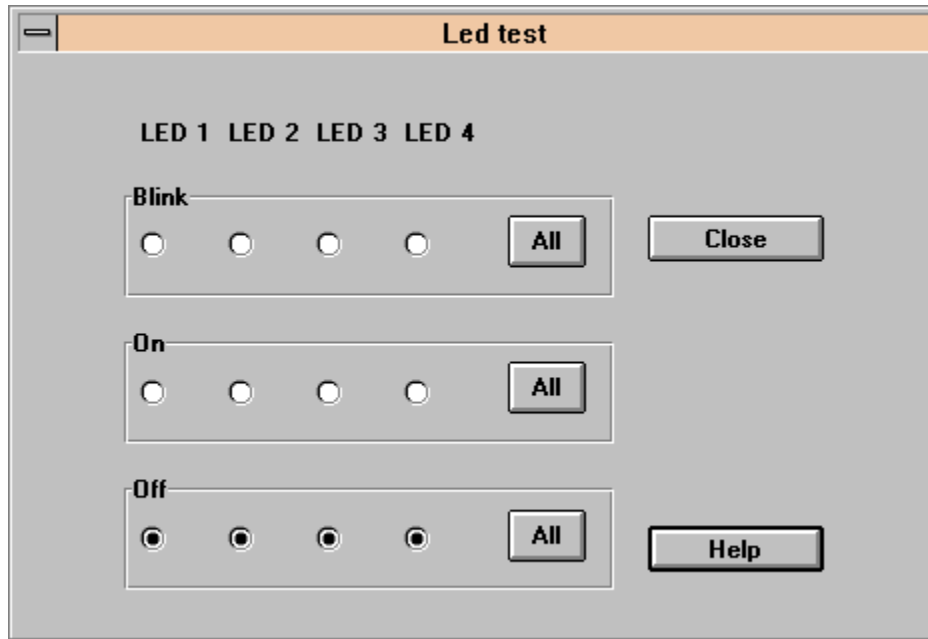
| | |
|--------------------------|---|
| Battery Voltage | : |
| System board temperature | : |
| LA loop current (IBB) | : |
| LA voltage (VBB) | : |
| A/D Reference | : |
| Accessory Detection | : |

Leds... command

Activation

Status Bar Text

Alt, E, L

Open **Led Test** dialog box.

The **Led test** dialog box contains the following radio buttons for all four leds:

- Off** turn led off
- On** Light leds on
- Blink** Set led blinking

There is also button for turning all leds OFF, ON or BLINKING.

Use the tab key to move from Led1 group to Led4 group. The led state can be changed with cursor keys.

When the dialog box is closed, all leds are always switched off.

Audio & line adapter... command

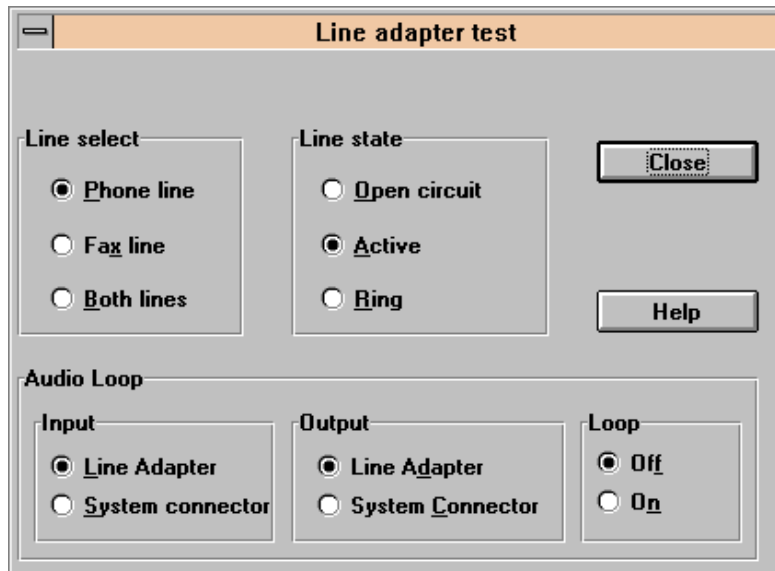
Activation

Status Bar Text

Alt, E, U

Open **Audio & line adapter Tests** dialog box.

This command is used for making audio and line adapter tests in **Audio & line adapter Test** dialog box.



The **Audio & Line adapter test** dialog box contains the following items:

Line select group:

Phone radio button (ALT+P)

sets phone line selected.

Fax radio button (ALT+F)

sets fax line selected.

Both radio button (ALT+B)

selects both phone and fax line.

Line State group:

Open circuit radio button (ALT+O)

Line adapter acts as if it was not connected

Active radio button (ALT+A)

Line voltage is fed to selected line(s) and audio path to line adapter is open.

Ring radio button (ALT+R)

Ring voltage is fed to selected line(s).

Audio Loop group:**Input** group:

The following two different values can be selected for input:

Line Adapter radio button (ALT+L):

Selects internal input.

System Connector radio button (ALT+S):

Selects external input.

Output group:

The following two different values can be selected for output:

Line Adapter radio button (ALT+D):

Selects internal output.

System Connector radio button (ALT+C):

Selects external output.

Loop group:

The following 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 the dialog box is closed, the line adapter is set to Open circuit state. Also the internal audio loop is turned off.

Call Simulation.. command

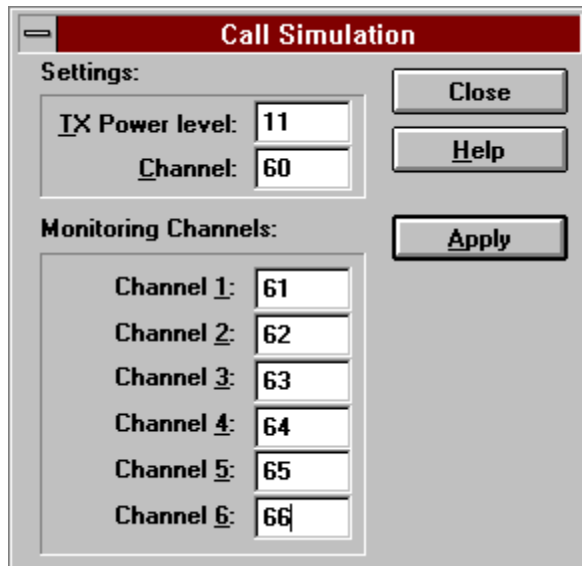
Activation

Status Bar Text

Alt, E, C

Open **Call Simulation** dialog box

This command is used for making call simulation. The function opens the **Call Simulation** dialog box.



The **Call Simulation** dialog box contains the following items:

TX Power Level edit box (Alt+T):

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

Channel edit box (Alt+C):

This tells the normal operating RF channel number. Normal GSM/PCN channel numbers can be selected. The same channel is used both for transmission and receiving. This updates the same parameter as **Channel** in the **RF-Controls** dialog box.

Monitoring Channels group:

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 (neighbor list) will have less than 6 selected channels. The minimum number of monitoring channels is one (all channels have the same value). The monitoring channel can also have the same value as the normal operating channel.

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

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

Activation

Status Bar Text

Alt, E, N

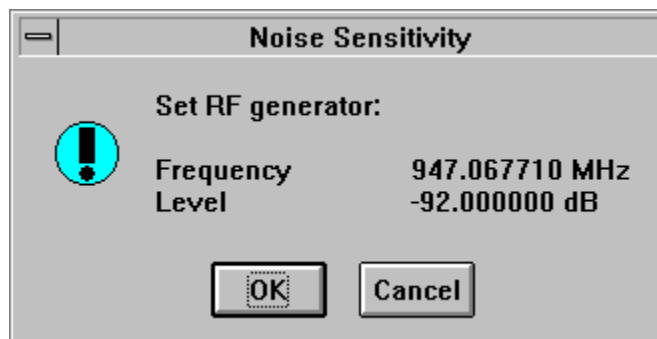
Opens Noise Sensitivity dialog box

This command is used for noise sensitivity measurement.

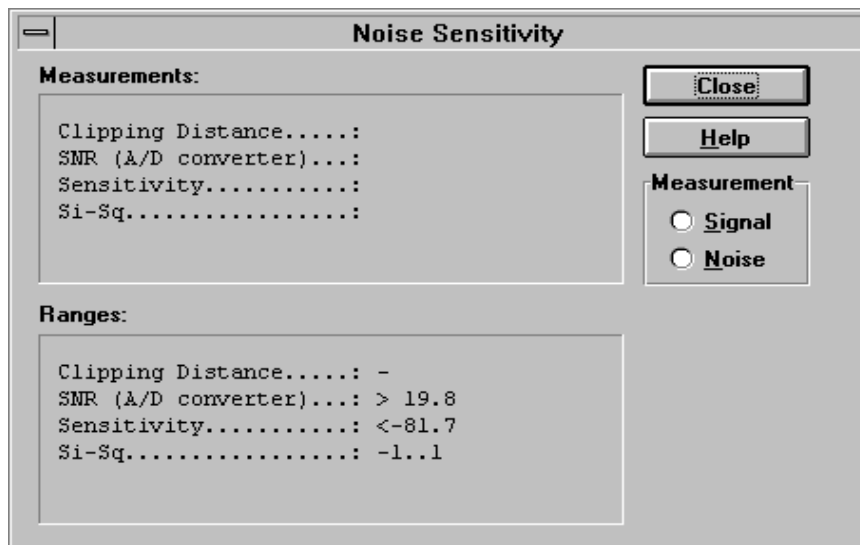
The following selections are made automatically when this tuning function is activated:

- Active Unit = RX
- Operation mode = Continuous
- AGC = 81 dB

Before the function opens a **Noise Sensitivity** dialog box, the application prompts:



The application then opens the Noise Sensitivity dialog box.:



The **Noise Sensitivity** dialog box contains the following items:

Measurements group:

Clipping distance is the difference to the signal clipping value. SNR is measured in the AD converter.

Clipping distance = clipping level (66) – signal value + comp_factor1
SNR = signal value – noise value + comp_factor1

Sensitivity = –92 dBm + 8 dB + comp_factor2 – SNR (for GSM)

Sensitivity = –90 dBm + 8 dB + comp_factor2 – SNR (for PCN)

The last value on the display is signal power difference between I and Q branch. The numbers are shown with 0.1dB accuracy. The error message, "OUT OF RANGE", is shown only if the SNR and/or amplitude difference values are not acceptable (SNR <= 18 dB + comp_factor2 – 0.5 dB(= accuracy) ; Sensitivity >= –100 dBm + 0.5 dB ; |Si – Sq| > 1 dB).

Signal/Noise radio button (Alt+S/Alt+N):

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

When signal data is received, the distance to clipping signal level is shown as dBs on the display. When either signal or noise measurement results are received the "MEASURING" text is removed and measurements are updated to the 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 exiting from this function, the following are automatically reset to the values which were selected before this adjustment.

- Active Unit
- Operation mode
- AGC value

Compensation factors:

Comp_factor1 = 4.64 dB (Compensation factor for 67.71 kHz signal, because the ASIC filter attenuates 67.71 kHz signal 4.64 dB)

Comp_factor2 = 2.27 dB (Compensation factor for real and calculated noise bandwidth difference. The real noise bandwidth is 80 kHz, and calculated bandwidth is 135 kHz)

Software

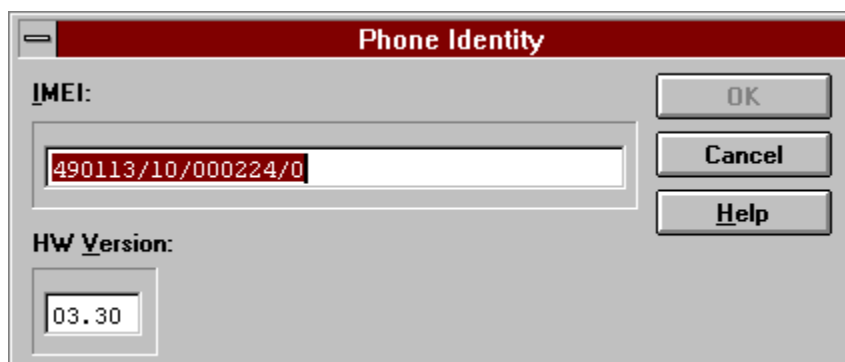
The software sub menu offers functions for Mobile Equipment mode and memory settings.

Phone Identity... command

Activation Status Bar Text

Alt, S, I Open **Phone Identity** dialog box for editing

This function is used to edit the phone identity. The function opens the **Phone Identity** dialog box.



The **Phone Identity** dialog box contains the following items:

IMEI edit box (Alt+I):

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

HW Version edit box (Alt+V):

Field where user can enter current HW version. The field can contain four digits and one dot. The dot is not sent to ME.

OK button (Enter):

Checks if some values are changed and if IMEI was modified, asks for confirmation. After confirmation, writes values to the phone.

Cancel button (Esc):

Cancels all edits, and does not save values to phone.

Start Up Self-tests... command

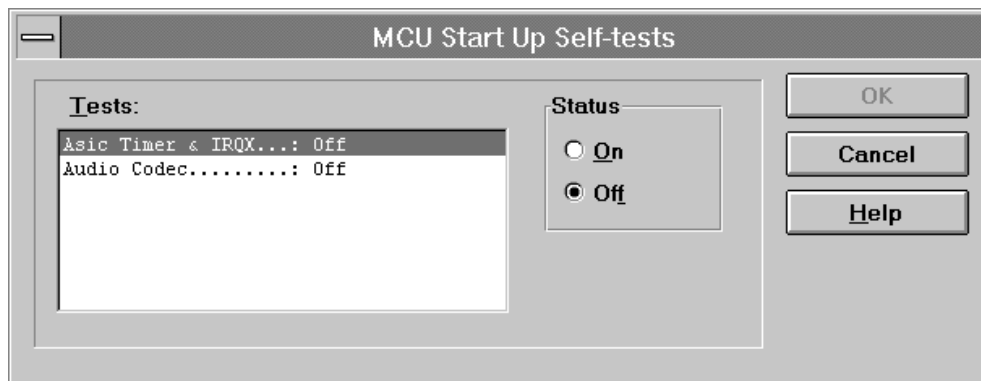
Activation

Status Bar Text

Alt, S, S

Open **MCU Start Up Self-tests** dialog box

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



The **MCU Start Up Self-tests** dialog box contains the following items:

Tests list box (Alt+T):

When the dialog box 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 each time 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 the main menu.

Set Default Values... command

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

| | |
|-----------|----------------------------|
| Alt, S, V | Set factory default values |
|-----------|----------------------------|

This command is used for resetting default values to the phone's EEPROM.

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

Network Settings... command

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

| | |
|-----------|--|
| Alt, S, V | Open Network Settings dialog box. |
|-----------|--|

After selection, the following **Network Settings** dialog box is opened:

The **Network Settings** dialog box contains the following items:

NSPS Settings group:

Min Time edit box (ALT+M):

Minimum time for NSPS.

Max Time edit box (ALT+X):

Maximum time for NSPS.

Control drop list (ALT+C):

NSPS Control values:

- Stop by send key
- Stop by any key
- No key control
- NSPS not supported

Custom Operator Name group:**C**ountry Code:

Specified country code

Network Code:

Specified network code

Name:

Name of the operator matching with country and network code.
Length for operator name is 8 characters for TFE/K-1.

LA settings... command

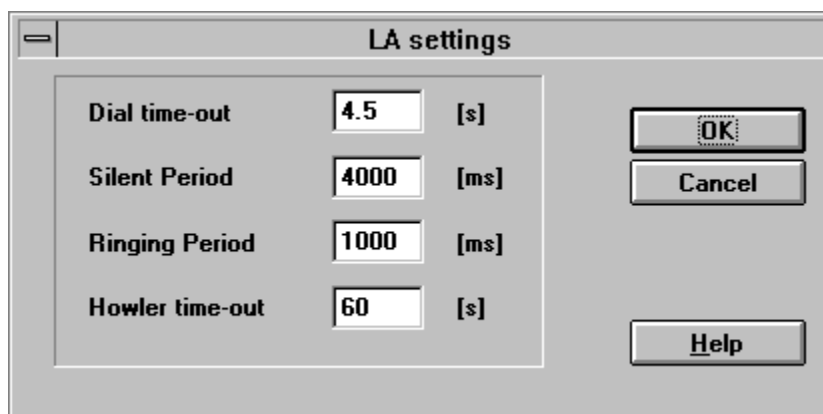
Activation

Status Bar Text

Alt, S, L

Open **LA Settings** dialog box.

This command is used for changing phone's Line Adapter settings. Function opens the following **LA settings** dialog box.



LA settings dialog box has following items:

Dial timeout edit box

Determinates the time which is ellapsed between users last entered digit and call attempt.

Silent period edit box

Silent period of ring tone.

Ringling period edit box

Ringling period of ring tone.

Howler timeout edit box

Timeout for howler tone, which is started if user leaves phone off-hook for long enough period.

After closing of Dialog Box, phone is initialised.

Warranty State... command

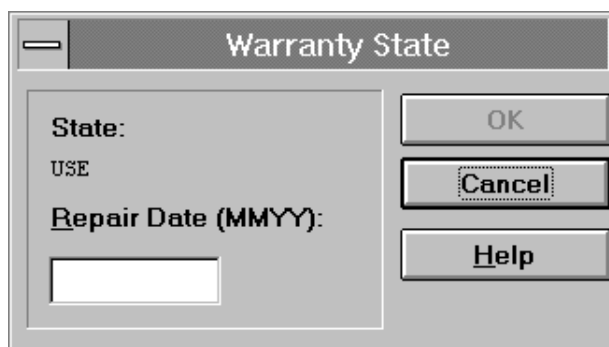
Activation

Status Bar Text

Alt, S, W

Open Warranty State dialog box.

This command is used for setting the Phone's Warranty State. The function opens the following **Warranty State** dialog box.



The **Warranty State** dialog box contains the following items:

State static text:

USE

For normal phones.

DEFECTIVE

For phones which are being swapped. Warranty and other information is transferred to the working phone.

EXCHANGE

For phones which are already repaired from DEFECTIVE units.

Repair Date edit box (Alt+R):

Format is MMYT (Where MM is month and YY two last digits of the year). The date is read from PC's clock. This is enabled only if state is DEFECTIVE.

OK button (ENTER):

Closes the dialog box and saves the Warranty State to the phone. This button should be enabled only when phone is DEFECTIVE and repair date is entered.

Cancel button (ESC):

Closes the dialog box, and does not save the Warranty State to the phone.

Dealer

The dealer sub menu offers functions for Mobile Equipment settings for dealers.

User Settings... command

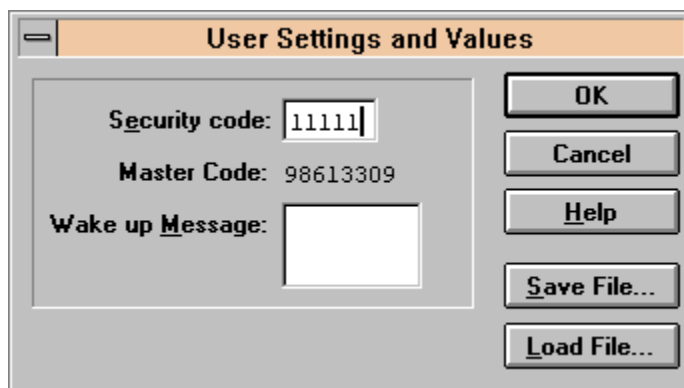
Activation

Status Bar Text

Alt, D, U

Open **User Settings and Values** dialog box

This command is used for reading, storing, and modifying the user settings and values.



After menu selection, the program presents a *query* dialog box: "Read user settings from phone?". If user answers **Yes**, all needed user settings will be read from the ME, including menu settings. If a reading error happens, an *error* dialog box is shown. If reading succeeds, the **User Settings and Values** dialog box is opened.

The **User Settings and Values** dialog box contains the following items:

Security code edit box (Alt+E):

Edit the security code which is saved to the ME memory together with other user settings and values. Only digits are accepted for the Security code. Length must be 5 digits.

Master Code static:

Code is 10 digits length, and it is read only.

Wake up Message string edit box (Alt+M):

Edit Wake up message. The wake up message name can have up to 16 characters.

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

Opens a default Windows **File Save As** dialog box, and asks for the filename for saved user settings and values.

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

Opens a default Windows **File Open** dialog box, and asks for the filename to load user settings and values.

Data entered in the dialog box is checked as valid before it is sent to the phone. If the application finds wrong characters in the Wake up message, the application will inform user, and request correction. The information window is shown during writing. The window tells how long a time it will approximately take to write values.

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

Both save file and load file functions have a default name which is the previously used name. For instance, if user data was saved to file USERA.USR and read function is activated, the default value is USERA.USR.

Reset UI Default Values... command

| Activation | Status Bar Text |
|------------|--|
| Alt, D, V | Reset phone to UI and SCM factory settings |

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

Quick Install... command

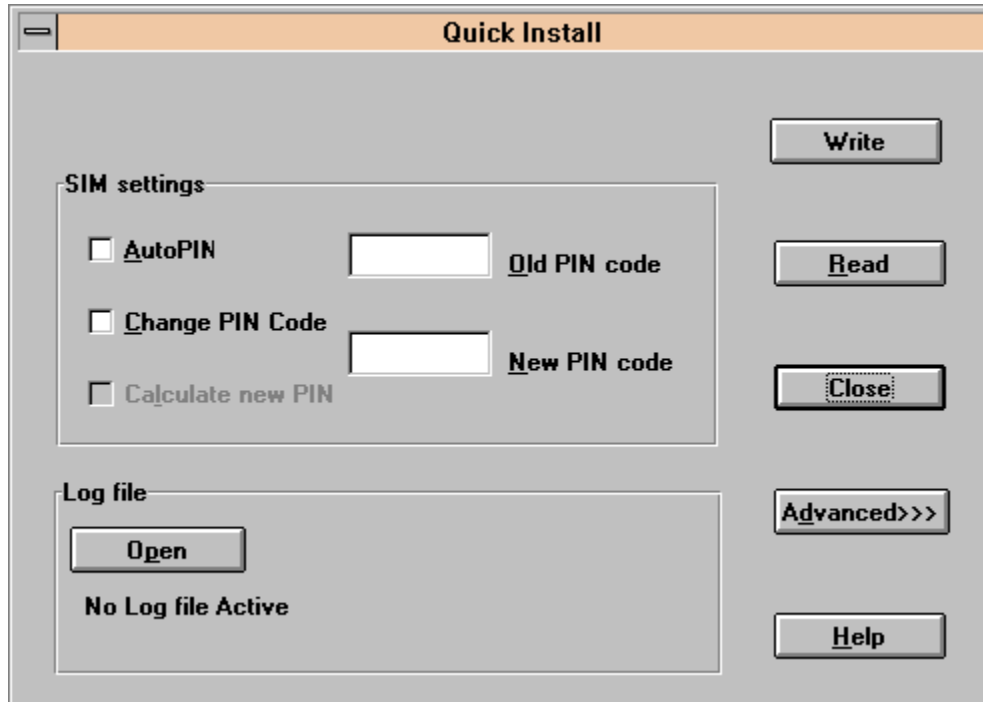
Activation

Status Bar Text

Alt, D, Q

Open **Quick Install** dialog box

This command is used for setting up PIN, AutoPIN other settings and values to WLL terminal.



Quick Install dialog box has following items:

Write button (ALT+W):

This button registers phone to MBUS, reads necessary codes from phone, and calculates new pin code, if **Calculate new PIN Code** check box is checked.

If **Change PIN Code** check box is checked, PIN code request is set on and PIN code is changed. Then selected options and codes are written to WLL terminal and saved to log file, if one is active.

After that contents of **Quick view** window is updated.

Read button (ALT+R):

This button registers WLL-terminal to MBUS, reads necessary codes from phone, and calculates new pin code, if PIN code algorithm is available. Also contents of **Quick Info** window is updated.

AutoPIN check box (ALT+A):

Checking this enables AutoPIN feature.

AutoPIN is a feature, which saves PIN code to phone's EEPROM. This way end user can use the terminal, but cannot use the SIM card on other devices, as the PIN code is unknown to user.

Change PIN Code check box (ALT+C):

Checking this enables setting of PIN code to SIM card. Sets also PIN query to SIM on.

Calculate new PIN Code check box (ALT+L):

Checking this enables calculation of new PIN code. Active only when valid PIN code Algorithm has been entered via **Setup code** dialog box

Old PIN edit box (ALT+O):

Old PIN code can be entered to this edit box. Enabled only when **AutoPIN** check box or **Change PIN Code** check box is checked. Default value of old PIN code can be saved to tesla.ini file via **Set defaults** button in **Advanced Quick Install** dialog box

New PIN edit box (ALT+N):

New PIN code can be entered to this edit box. If PIN code calculation code has been entered via **Setup code** dialog box, new value is displayed here. Active only when **Change PIN Code** check box is active.

Open button (ALT+P):

This button opens dialog, which asks name of log file to contain info about terminals that have been set up using Quick install. The name is saved to tesla.ini file, and is suggested as default when next time opening log file.

Log file is ASCII file, in which items are separated by spaces. At start of log file is date of creation and filename.

Log file contains following information of each terminal on one line separated by spaces. After logging has been activated, text on **Open** button is changed to Close.

- Date of setup
- MCUSW version
- IMEI (including slashes)
- Security code
- PIN code
- IMSI

Pressing **Open** button (now displaying **Close** text) while logging is active, stops logging and "No log file active" text is displayed on **Log file** edit box.

Log file static text:

Static text containing log file name. Log file name can be entered only by pressing **Open button** . Contains text “No log file active” when logging has not been enabled.

Advance>>> button (ALT+D):

This button opens **Advanced Quick Install** dialog box .

When **Quick Install** dialog box is opened, also **Quick Info** window is opened.

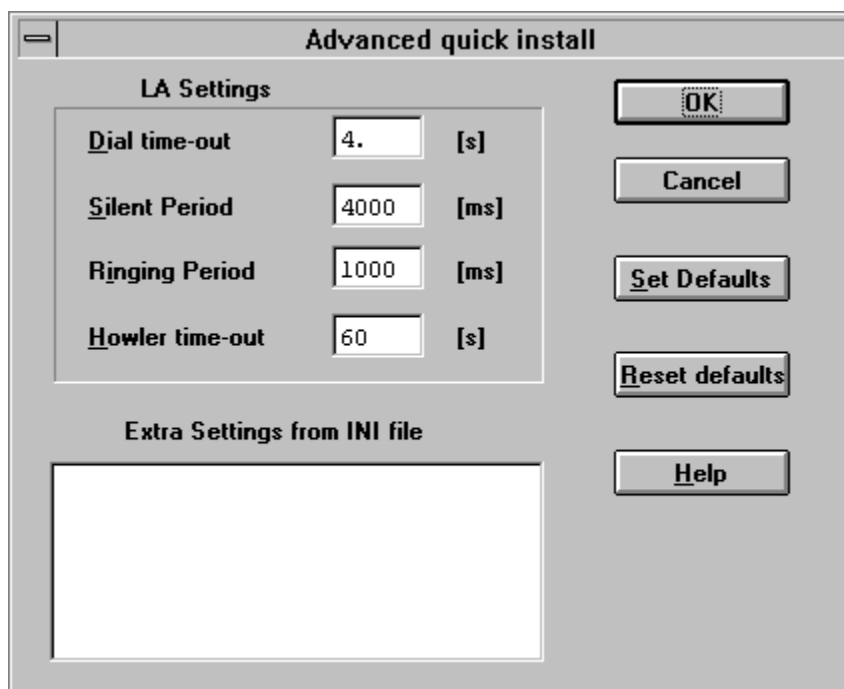
When **Write** button is pressed, waiting window is displayed and operations described above are executed. When all values are sent and responses received, waiting window is removed and **Quick Install** dialog is back in control. The waiting state can be interrupted with **Cancel** (ESC) button. If writing to the ME is interrupted, only some of the values in the ME may be changed.

Data entered in dialog box is checked to be valid before it is sent to phone. If application finds wrong characters, application will inform user and requests correction.

If SIM goes to PUK state, PUK code must be entered from handset.

Advanced>>>... button

This button opens **Advanced Quick Install** dialog box , which can be used to set default values for some special terminal settings, like dial time-out.



Advanced Quick Install dialog box has following items:

Set defaults button (ALT+S):

This button sets current settings as default to tesla.ini file.

Reset defaults button (ALT+R):

This button resets defaults settings to ini file.

Dial Time-out edit box (ALT+D):

Time out dial time-out in seconds.

Silent period edit box (ALT+S):

Silent period of ring tone is milliseconds.

Ringing period edit box (ALT+R):

Ringing period of ring tone is milliseconds.

Howler time-out edit box (ALT+H):

Howler time-out in milliseconds.

Extra Settings from INI file list box:

This edit box contains the extra settings, which can be found in ini file.

Setup code... command

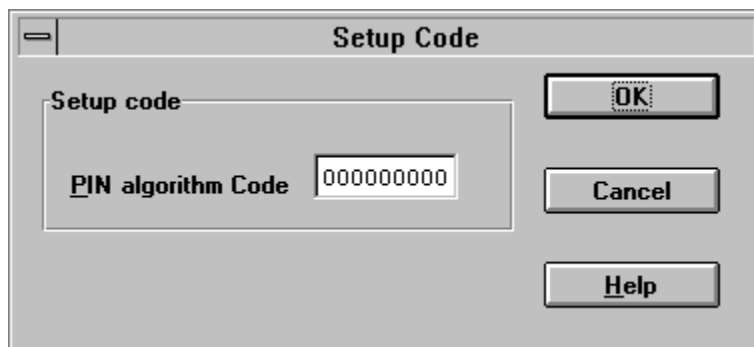
Activation

Status Bar Text

Alt, D, S

Open **Setup Code** dialog box

This command is used for setting code, which determinates algorithm for PIN code calculation.



Setup code dialog box has following items:

Pin algorithm Code edit box (ALT+P):

Here user can enter code, which determinates algorithm for calculating new pin code from phones IMEI. Length of pin code resulting from this algorithm is always 8 digits. The code is crypted and saved to tesla.ini file. Once code has been entered and dialog box is closed, it is not possible to see the entered code again.

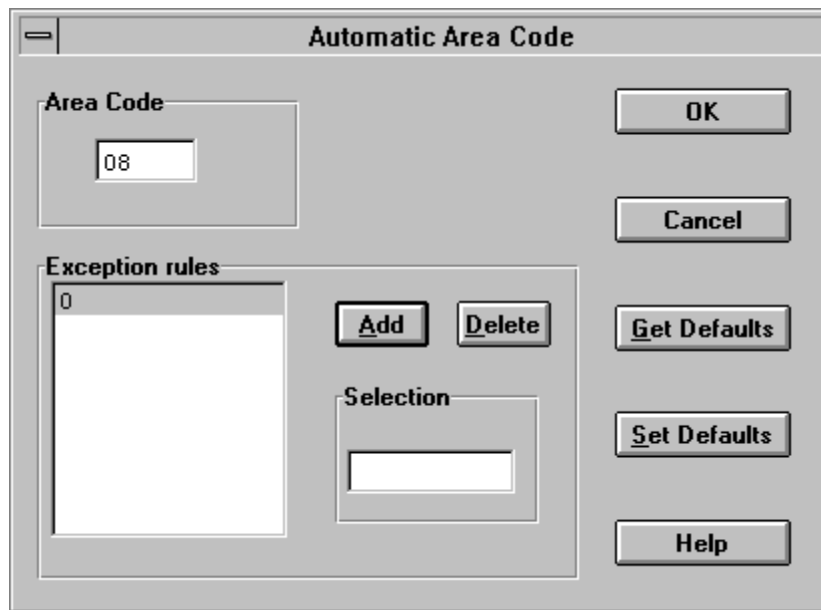
Automatic Area Code... command

Activation Status Bar Text

Alt, D, A Open **Automatic Area Code** dialog box

This command is used for setting Automatic Area Code settings.

Note ! If Automatic Area Code has not been enabled in product profile, this selection opens error dialog box, with text "This option is not available". Otherwise Automatic Area Code dialog box is opened.



Automatic Area Code dialog box has following items:

Area Code edit box (ALT+C):

This edit box can be used to enter local Area Code, which is automatically added to outgoing call numbers, which don't contain any of **Exception Rules** number prefixes.

Exception Rules List box (ALT+E):

This list contains those number prefixes, which prevent Area Code Addition to called number.

Selection edit box (ALT+S):

Here new Exception Rule can be entered.

Add button (ALT+A):

This button adds the number on **Rule** edit box to **Exception Rules** list.

Delete button (ALT+D)

This button deletes current selection from list box.

Get Defaults button (ALT+G)

This button loads default Automatic Area Code settings from ini file.

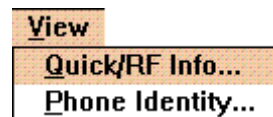
Set Defaults button (ALT+S)

This button saves current Automatic Area Code settings to ini file.

When **Automatic Area Code** dialog box is opened, Area Code and Exception Rules are read from phone. When OK button is pressed, codes in Area Code edit box and **Exception Rules** list are checked. If codes are not OK, an error message is shown. If codes are OK, they are written to phone.

View

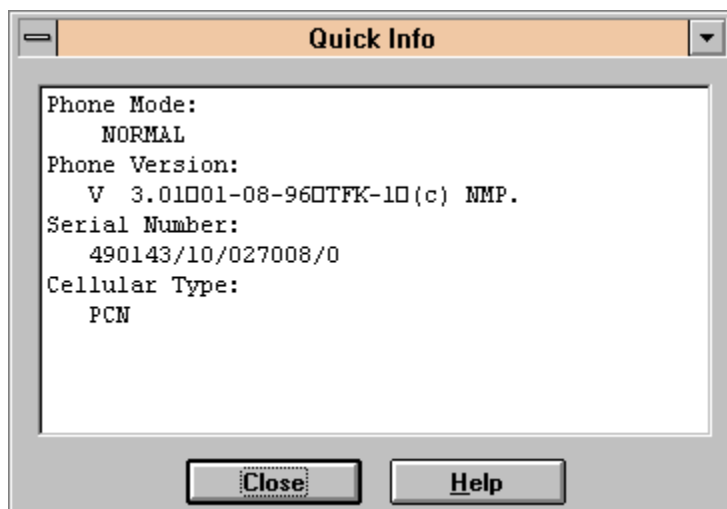
Menu items (except the following) are mainly for future usage.



Quick/RF Info... command

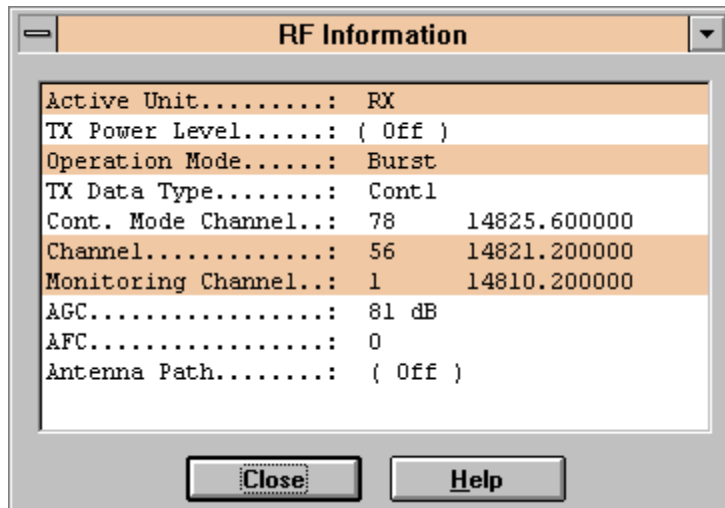
| Activation | Status Bar Text |
|------------|----------------------------|
| Alt, V, Q | View Quick/RF information. |

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



Note! Special conditions (For example phone's SIM lock is ON) cause this dialog box to change color to make this special condition clear to the user.

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

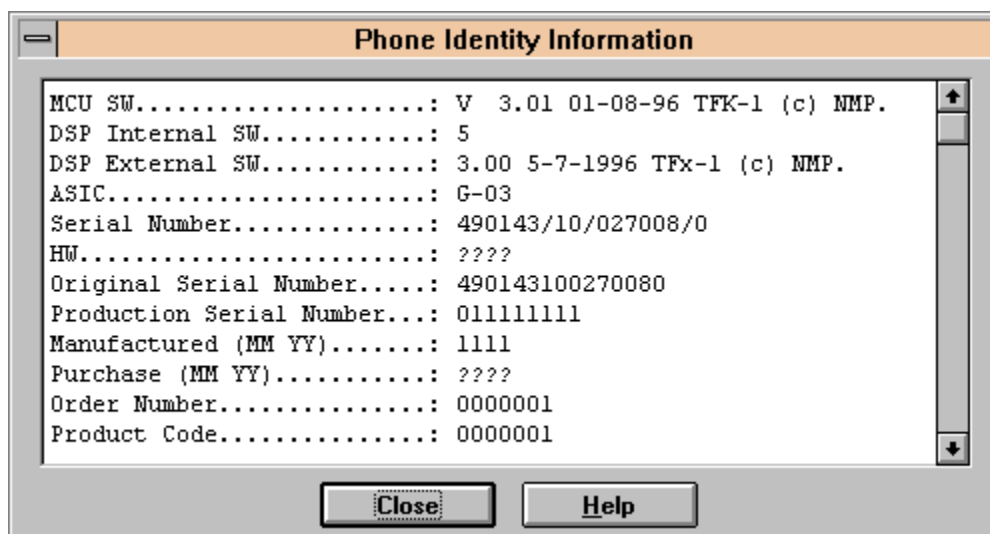


Phone Identity... command

Activation Status Bar Text

Alt, V, P View phone identity.

This command opens the **Phone Identity Information** dialog box, which shows identification information. Information is shown in a modeless dialog box which may be left open during other operations. It is also updated when ever needed.



Help

The Help menu offers commands which provide assistance with this application:.

Index command

| Activation | Status Bar Text |
|---|---|
| Alt, H, I | Provide general instructions on using help. |
| This command displays the opening screen of Help. From the opening screen, the user can jump to step-by-step instructions for using Service Software, and various types of reference information. | |
| Once Help is opened, the user can click the Contents button whenever the user wants to return to the opening screen. | |

General help command

| Activation | Status Bar Text |
|------------|-----------------|
| Alt, H, G | General help |

Using Help command

| Activation | Status Bar Text |
|----------------------|---------------------------------------|
| Alt, H,U SHIFT+F1 | Display using help system information |

About... command

| Activation | Status Bar Text |
|------------|--|
| Alt, H, A | Displays the version number of this application. See Login Dialog box. |

Initialization File

The Service Software has an initialization file which has extension .INI. The initialization file is TESLA.INI which includes all the following selections (on mentioned menus or dialog boxes) and parameters:

- RF Controls dialog box ([TFE/K-RF])
- Channel (Channel=)
- Continuous Mode Channel (ContModeChannel=)
- Monitoring Channel (MonitoringChannel=)
- AFC (AFC=)
- AGC (AGC=)
- Data Type (DataType=)
- Power Level (PowerLevel=)
- DLL Filenames (TFE-1 and identical TFK-1)
- User Interface (UserInterface=)
- Functionality (Functionality=)
- RSSI Dialog box (TFE-1LEVELS and identical TFK-1LEVELS)
- AFC Level (AfcLevel=)
- RSSI Low (RssiLow=)
- RSSI High (RssiHigh=)
- AFC Level (AfcLevel=)

Appendix 1, Vocabulary

| Abbreviation | Description |
|--------------|--|
| API | Application Programming Interface |
| ASIC | Custom circuit which for instance controls communication between MCU and DSP |
| CLF | Common Look and Field |
| DATA | DATA interface module |
| DAU-4S | M2BUS – RS-232 adapter |
| DCT2 | Digital Core Technology Second Generation |
| 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) |
| IMEI | International Mobile Equipment Identification code |
| 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 |
| MFC | Microsoft Foundation Class library |
| MS | Mobile Station |
| MTI | Message Transfer Interface |
| PC | IBM PS/AT or compatible personal computer |
| PCBOX | Local Net driver SW for PC |
| PCI | Phone Controlling Interface SW for PC |
| RF | Radio Frequency parts |
| RFI | Radio Frequency Interface circuit |
| SW | Software |
| TFE/K-1 | TFE-1 and/or TFK-1 |
| UI | User Interface |
| WLL | Wireless Local Loop |

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