

PAMS Technical Documentation NSD-3 Series Transceivers

Service Software and Tuning Instructions

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WinTesla User's Guide

General

The name **TESLA**, when used by Nokia, is an acronym for **TEst** and **Service Locals Application**. Tesla for Windows (i.e. WinTesla) is a software package designed to operate in the Microsoft Windows environment. The software package is made of two modules, the WinTesla core module and a service software module. The WinTesla module is similar to an operating system for various service modules. In this way many Nokia products can be serviced using one common software package.

NOTE: The WinTesla core module **MUST** be installed for "any" service module to run.

Service Software

Due to the modular design of Service Software, various generations of Nokia products can be serviced while sharing a similar user interface. The common user interface is explained in the first part of this document followed by the specific module information.

The software can be used to control the phone by entering commands via PC/AT/NT – running MS Windows 95, 98 or NT.

This document refers to WinTesla version 5.38 or greater.

If not familiar with the Windows interface, consult the *Microsoft Windows User Guide* for further information.

Equipment Requirements

Computer: PC Pentium, 100 MHz min. or compatible with at least one, unused serial port, COM1 or COM2, one parallel port (LPT1), 5MB hard disk space and 16MB RAM required.

Display: Any supported by MS-Windows version Windows 95, 98 or NT.

Operating System: DOS 5.0 or later running MS Windows 95, 98 or NT.

WinTesla Application Software (product code: 0774046)

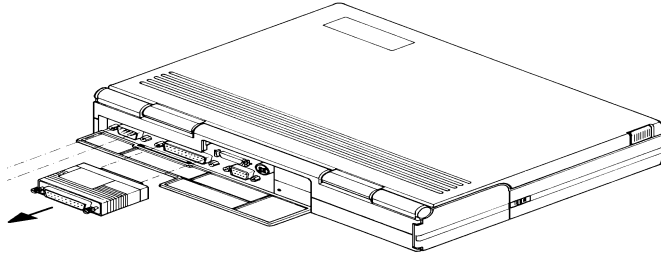
Software Protection Key PKD-1 (product code: 0750018) or **PKD-1D** (product code: 0750053)

Phone-Specific Service Software Module (product code: see phone-specific information)

Mechanical Connections, Dealer Functions

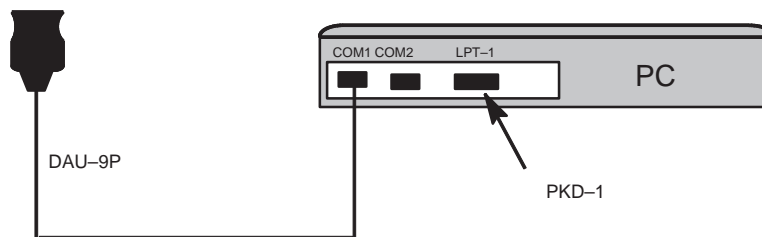
The software controls the phone via a separate adapter (DAU-9P, or DAU-9S) connected to the serial port of the PC and to the phone's bottom connector using the Nokia proprietary communication method called M2BUS.

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).



Dongle insertion

The PKD-1* should not affect devices working with it. If some errors do occur, try printing without the PKD-1 connected. If printing is now OK please contact your supplier who will endeavor to replace your PKD-1*.



Servicing setup

WinTesla Core Software Installation

The WinTesla core software is delivered on a 3.5" diskette and is protected with a protection "key" (PKD-1 or PKD-1D) which must be attached to the parallel port LPT1 when the WinTesla service software is being used. Keep the original diskette safe to enable upgrading of the program. To install the WinTesla software package, proceed as follows:

NOTE: For instructions on installing the service module (see Phone Specific Service Module Installation)

1. Insert the WinTesla Application diskette into your computer.
2. Start Windows, open File Manager, and log into drive A: Type `A:` and press `<Enter>`.
3. Start `INSTALL.EXE` and install the WinTesla Core Software to drive C:

After installing your Windows, desktop will now have a "Service Software" group and a "Service Software" icon within that group.

To start the program, double click on the "Service Software" icon.

NOTE: The dongle driver installation is mandatory for getting the Wintesla SW to start. The dongle driver instruction is delivered with the dongle driver SW.

NOTE: In the case of using phone SW upgrading device ("Flash Box") like FLS-1 or FPS-4 the corresponding driver is needed to install before using the SW.

Phone Specific Service Module for NSD-1/3

Installation

The product specific DLL (Dynamic Link Library) is needed after the Win-Tesla Core software has been installed.

1. The floppy disk (product code: 0774102 in case of NSD-1/NSD-3) includes NSD_w242.exe file, (where 242 is the version number, may be different) double click it. The files will be loaded to the "temp" directory.
2. After this, use **File Manager** or **My Computer** and go to that "temp" directory. Start/Run (or double click) the install.exe file. That will install the phone specific program into your PC. The recommended file structure is C:\wintesla\
3. The PC will show the status of the process.

Using WinTesla with NSD-1 and NSD-3 phones

The WinTesla application, "WinTesla.exe", is phone independent. It relies on separate, phone specific, "modules" to provide communication, menus and test algorithms.

For each phone type – or product family – a phone interface module and menu module are required. The modularity of WinTesla allows support for other languages, so one phone type may have one phone interface module and several menu modules, all in different languages.

WinTesla allows you to select the language you wish to use (if available), and will automatically load the correct phone interface module for the connected phone. When a different phone type is connected, WinTesla will load the new phone interface and associated menus.

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 following menus for the Service Software package when a phone is connected:

- Product*
- Configure*
- Tuning (not available with PKD-1D)
- Testing (not available with PKD-1D)
- Software
- Dealer

- View
- Help*

* – always displayed, even if the phone is not connected.

The menu is broken down into sections that are indicated with menu separators. Each section 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 to 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. 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.

Login ID Setup (not needed for dealer use)

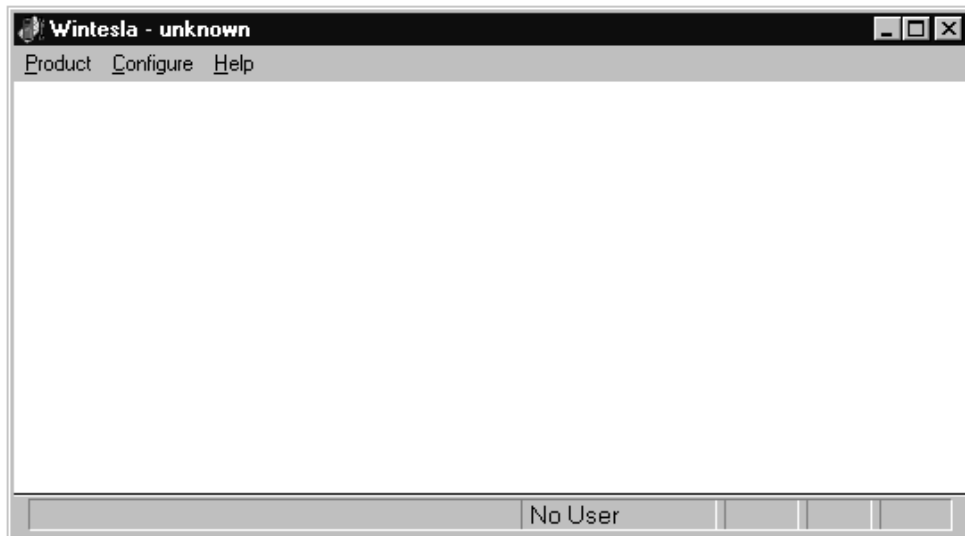
When WinTesla first starts, the Login screen below will appear. Type in your 3 character ID and press <Enter> or click on the OK button.

Login Screen



If WinTesla cannot find the file, op_id.val, which contains the Login IDs, then the **OK** button will be 'grayed'. Otherwise, press the **CANCEL** button and only the Fault Logging feature of WinTesla will be deactivated.

WinTesla Screen



The main WinTesla screen (if no phone is attached) is displayed with 3 menu items at the top of the screen and a status bar at the bottom.

The information on the left of the status bar will be used to provide information when WinTesla is performing tasks: such as reading data from the phone. The status bar also includes the name of the current user.

Getting Started

Setup for BUS type and COM port:

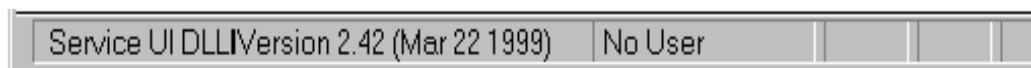
When you have installed the WinTesla core software with PKD-1 drivers and the product specific DLL software, the next step is to tell the software what kind of hardware connection you are using.

1. Select the correct **COM Port**. For example, COM1.
2. Select the **Hardware Type**. For example, service cable DAU-9P (>>DAU for MBUS).
3. Select the **Media**, For example, MBUS.
4. Press **Add** to save configuration.

When you start using the WinTesla program with a new phone you should:

1. Select **New**, then the program starts to scan the phone that has been connected to the PC or;
2. Select **Open**. Then you need to select the right product type, i.e.; NSD-3.

After the product specific DLL has been selected, it will be displayed on the bottom of the PC screen. The version and date of the Product specific DLL is also displayed.

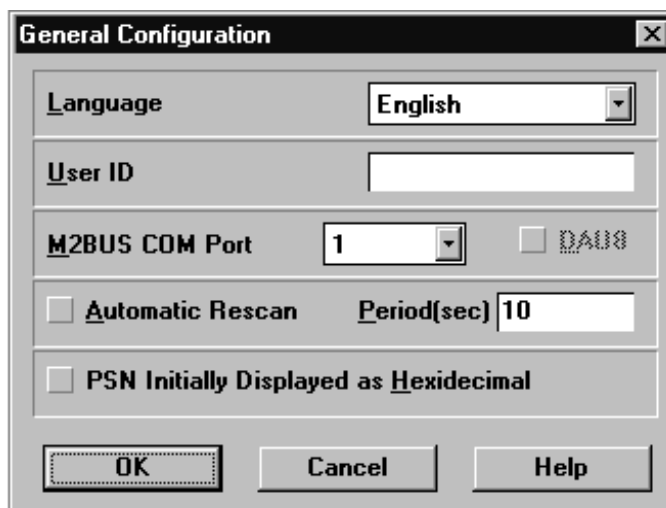


Configure Menu

The configuration menu allows you to setup such things as directory paths, user interface language and FaultLog options.



Options



Language

This option allows you to change the language used in the WinTesla application.

User ID

Allows the user ID to be entered if the user's name is setup in the opt_id.val (validation) file.

M2BUS COM Port

This option allows you to select which communications port the phone is to be connected. The change will take place immediately after pressing OK.

Automatic Rescan

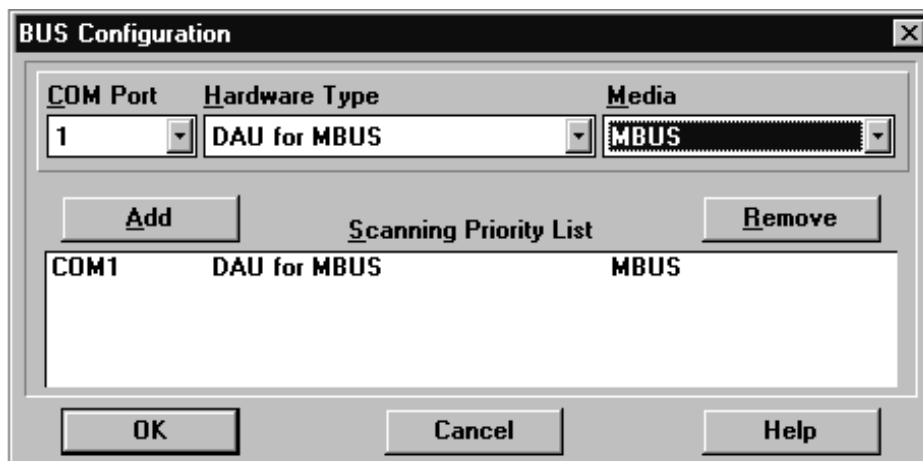
Automatic rescan is a mechanism to automatically check for the new phone; the time between re-scans is user configurable. When a phone is scanned and recognized, the corresponding phone interface and menu are loaded, extending the main menu at the top of the screen and displaying the phone type and description at the bottom of the screen.

The **Product|New** (or **Ctrl+R**) function can be used to rescan the phone in-between automatic rescans or when automatic rescan has been disabled. The automatic re-scan mechanism is disabled when the **Product|Open** function is used to load a phone interface.

Check in the automatic rescan box enables the automatic rescan option. Clicking on the check-box (making the check-box blank) will disable the automatic re-scan option. The time between re-scans (in seconds) is entered into the edit box.

Pressing the OK button will save any changes made. Pressing CANCEL will discard any changes you may have made.

Buses



Setup for BUS type and COM port:

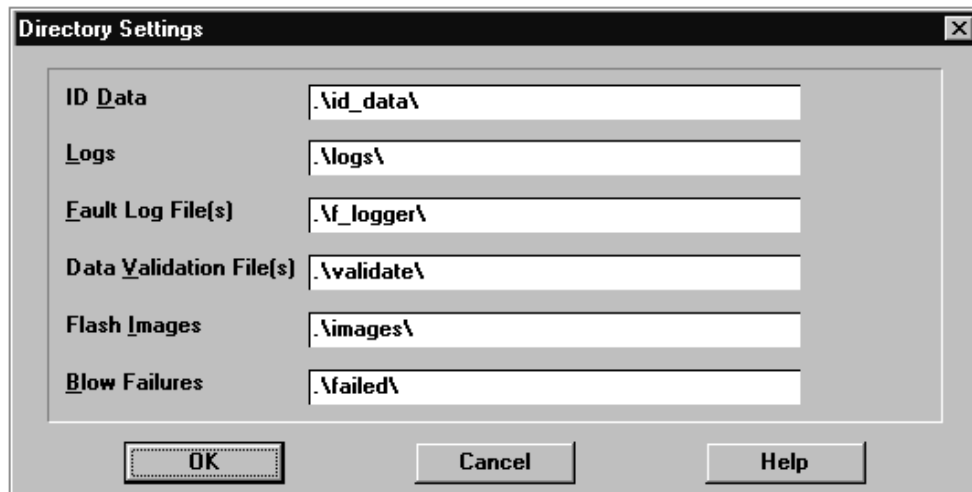
When you have installed the WinTesla core software with PKD-1 drivers and the product specific DLL software, the next step is to tell the software what kind of hardware connection you are using.

1. Select the correct **COM Port**. For example, COM1.
2. Select the **Hardware Type**. For example, service cable DAU-9P (>>DAU for MBUS). In case of FLS-1 select also DAU for MBUS. IN case of 3-box flash concept select Combox for MBUS.
3. Select the **Media**, For example, MBUS.

4. Press **Add** to save configuration.

Directories

This function allows you to organize your data into different directories.

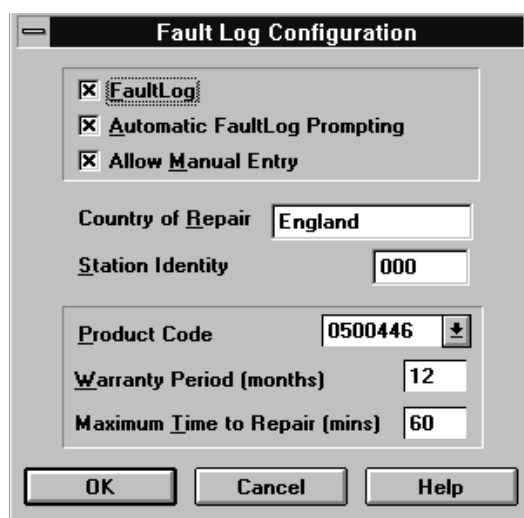


The directories already exist when the WinTesla core software is installed. If an invalid directory is entered, then an error message will be displayed.

The use of a backslash (\) at the end of the directory name is optional. Clicking on the OK button will save your changes.

Fault Log Configuration (needed only if fault logger system in use)

Fault Log is a feature that allows the PC to create a record of each phone that is serviced for historical tracking. This function allows you to configure the FaultLog mechanism. Clicking OK after making selections, saves all changes made.



Fault Log

This option allows you to enable or disable the FaultLog mechanism. Choosing to disable the FaultLog mechanism results in the **Product |Fault-Log** options being 'greyed' and the F9 button being disabled.

Allow Manual Entry

This option allows you to disable manual entry of data that was unavailable from the phone.

Automatic Fault Log Prompting

Enabling this option results in a prompt being displayed if the phone has changed.

Station Identity

Enter the unique identity of your 'workstation'; this ID is used to write FaultLog files.

Country Of Repair

Enter the country of repair.

Warranty Period (months)

Each product code has an associated warranty period. This option allows you to change those warranty periods. If no phone is connected then **all** product codes supported will be displayed. However, if a phone is connected then only the product codes associated with that phone type are displayed.

Note: Changing the Warranty Period in the Fault Log data file has no affect on the products warranty terms as stated from the manufacturer.

Maximum Time To Repair (minutes)

Enter the maximum time allowed to repair a phone.

Fault Log Application

The aim of the Fault Log application is to provide NMP After Sales Companies worldwide a standard method for the collection of Fault and Repair Data from their service processes. This information can also be used by NMP R&D and Manufacturing organizations as well.

The Fault Log application can be regarded as a data entry sub-routine run from the WinTesla Service Software package at the end of a repair. This allows for quick and uniform recording of the service performed on the product.

Each product repaired, will generate one unique record in a FaultLog file consisting of up to 37 data fields containing information about the product and how it was repaired. This information is read automatically where possible, from the products own internal EEPROM and then entered manually by the Service Technician to form a complete service record.

For more advanced implementations, the repair records are copied and collected by the electronic mail system installed in the Service Center and are sent electronically to a Central Service Database located in Finland.

Completing a FaultLog Record

Once WinTesla has been configured correctly it operates in the following manner:

- Wintesla automatically reads the product details from the products EEPROM and writes them as a record to a pre-determined file.
- Proceed with the repair task, utilising a combination of software driven tuning and hardware modifications.

On completion of the repair task you have a choice:

- A. With the product still connected to the PC, manually display the repair data entry screen by selecting Function Button F9.
- B. Alternatively, the product can be disconnected and the next product for repair connected in its place.

As long as Automatic Prompting is enabled the previous products repair data entry screen will be displayed.

Enter the repair work performed on the product in the repair data screen.

Check the automatic data for this product, read earlier, to ensure its accuracy.

When satisfied with the data, save the entry. This process adds a complete record containing the product details and the repair details to the FaultLog output file.

The output file can then be manipulated by a number of different systems, as required, as a detailed record of the product fault.

To attempt to record all of this information 37 data fields are defined for each FaultLog record. These can be split as follows:

Product definition information fields

Repair / fault information fields.

Most products have their information stored in EEPROM. WinTesla automatically reads this information from the EEPROM and writes it to the FaultLog record. This part of the record is shown below.

Most products have their information stored in EEPROM. WinTesla automatically reads this information from the EEPROM and writes it to the FaultLog record. This part of the record is shown below.

Fields that are 'greyed out' etc. are data that has been automatically retrieved from the phone's EEPROM. All other fields are entered manually; fields are summarized below.

Operator

Automatic: Station, Country
Manual : Time to repair, Job ID, Operator ID

Phone

Automatic: Product code, Production SN, Order No., Hardware ID, Software version, Mfr. SN/ESN/IMEI, Mfr. Date, Issue date
Manual: Warranty

Fault

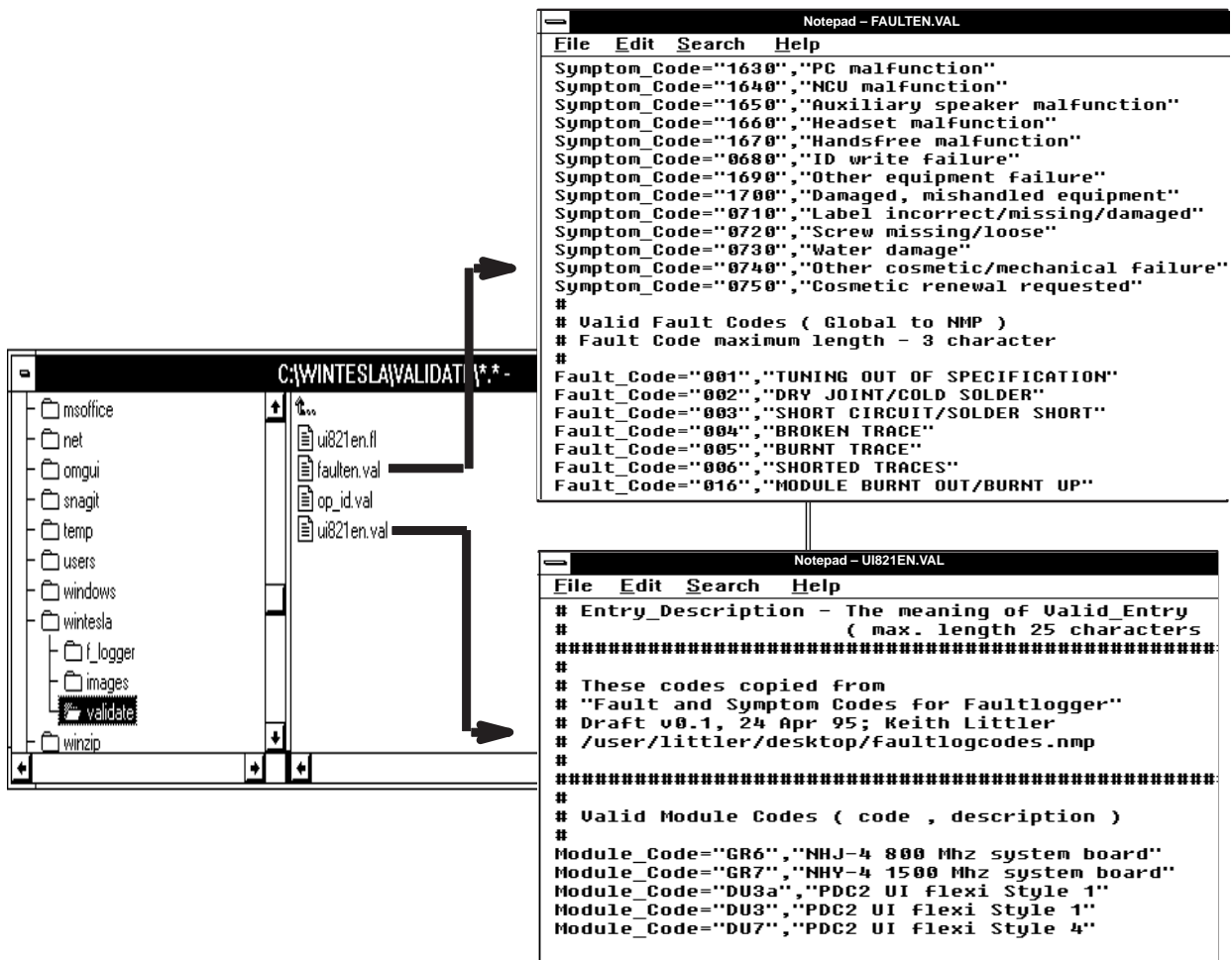
Automatic: none
Manual Module, Fault, Symptom, Circuit ref., Part Number

The current FaultLog application allows for the entering of three priority levels of fault / repair information seen as *Primary*, *Secondary* and *Tertiary* faults.

The *Module*, *Fault* and *Symptom* fields have variables selected by the arrows alongside each respective field.

A comprehensive list of faults and symptoms as well as all current modules are already listed within the software. These three fields can be updated by accessing and editing the following files.

| | |
|------------------|-------------|
| Field | DOS File |
| Modules | nhd4en.val |
| Faults, Symptoms | faulten.val |



Other Parts Replaced

Automatic none
Manual all fields

Enter other parts that have been replaced i.e. for wear and tear purposes etc..

This Entry

Automatic Entry Indicator, Date, Time
Manual *Comment*

Cost

Automatic Total
Manual *Parts, Labour*

FaultLog Macros

The Macro sub-menu can be accessed by selecting the macros button on the FaultLog main screen.

Macro's in FaultLog are a set of standard repair actions defined and stored in order to represent frequently repeated repairs. These Macro's are related to the Product Code of the product, so whatever product is

connected, FaultLog will display the Macro list for that particular Product Code.

A Macro's standard repair information can also be pasted into the Fault-Log record for that product.

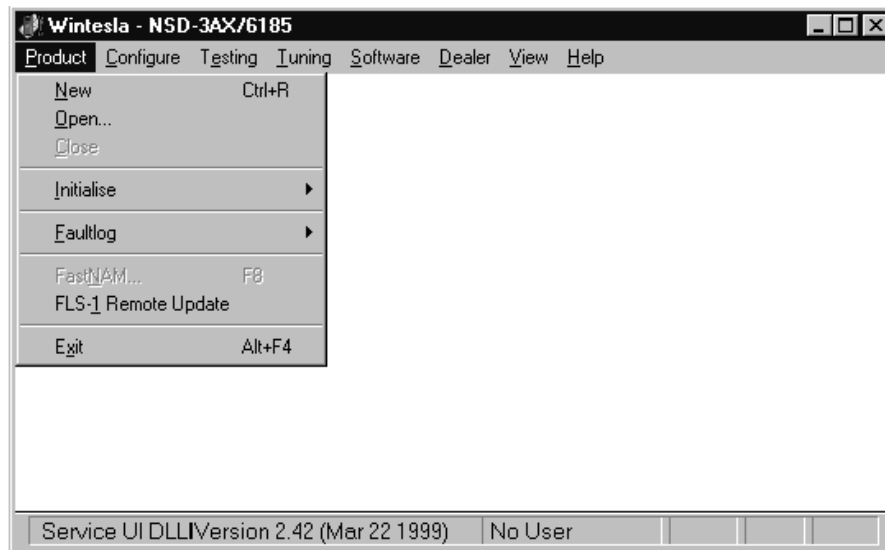
Macro's are saved initially under a name you can define yourself from the main FaultLog screen. All the information contained in the manually entered fields i.e. Module, Fault, Symptom, Circuit Ref and Part Number are recorded and saved under this name.

Flash Device...

This function is for select the right flash concept. The default setting is POS flash with is based on FLS-1 device connected to the parallel port of the PC.

If the FPS-4, FLA-5 and TDF-4 flash device is used then the setup 3-box is needed to select.

The Product Menu



New (Ctrl+R)

The 'New' function (which can also be activated by pressing Ctrl+R) is used to scan for a phone when either the automatic rescan option is off or the automatic rescan timer has not expired (see **Configure|Options** section for automatic rescan).

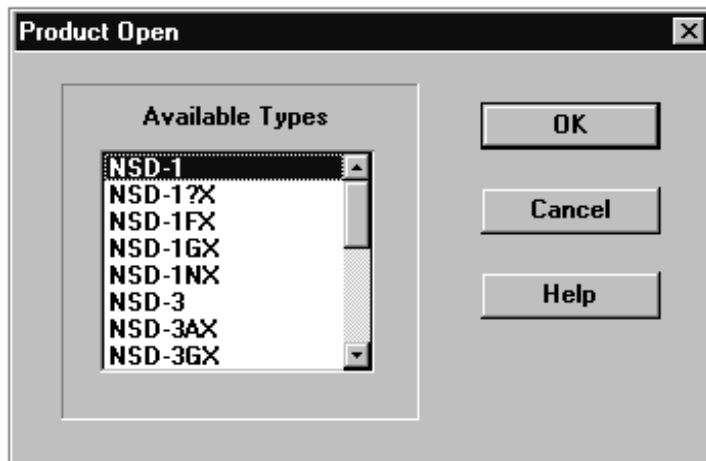
If the phone type is unrecognized or unsupported by the current WinTesla system, then a warning message will be displayed.

If the phone is changed (with the same phone type only the serial number is changed) the phone will be initialized into local mode. If the phone is changed to a different phone type, the current DLLs are unloaded and new ones are loaded for that phone.

If the Quick/RF Info view is open, the window will be automatically updated. If the Phone Information view is open, it will be automatically updated.

Open

The 'Open' function allows you to 'force load' a phone interface, even if there is no phone connected to the system.



A dialog box will appear and a list of supported phone types. To select a particular phone, highlight the phone type name and click OK.

Clicking on CANCEL will stop the request and no new phone type will be loaded.

Loading a phone interface will disable the automatic rescan function (see **Configure|Options** section for automatic rescan).

Close

This function will close the currently loaded phone type interface that had been loaded using the **Configure|Options** function. You cannot 'Close' a loaded phone type interface if it was loaded by a rescan.

Initialize

| | |
|------------|---|
| Activation | Status Bar Text |
| Alt, P, I | Opens a submenu for the Normal Mode and the Local Mode. |

Normal Mode

| | |
|------------|---|
| Activation | Status Bar Text |
| Alt, P, N | Initializes the phone to normal (cellular) mode |
| F5 | |

When the 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 the 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.

Initialization routine checks the phones' cellular type and if it is unsupported, the phone application unloads the DLLs.

The After Sales SW sets automatically the MS state to normal 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.

Local Mode

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

Selection will change the MS state to *local*. When the user selects item from Testing or Tuning menus, the After Sales SW software will change automatically the MS state to local.

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

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

FaultLog

Activate Faultlog...

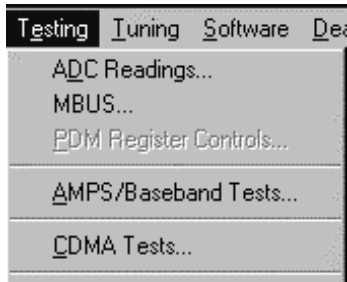
Edit Faultlog...

This function is only needed if fault logger system is in use.

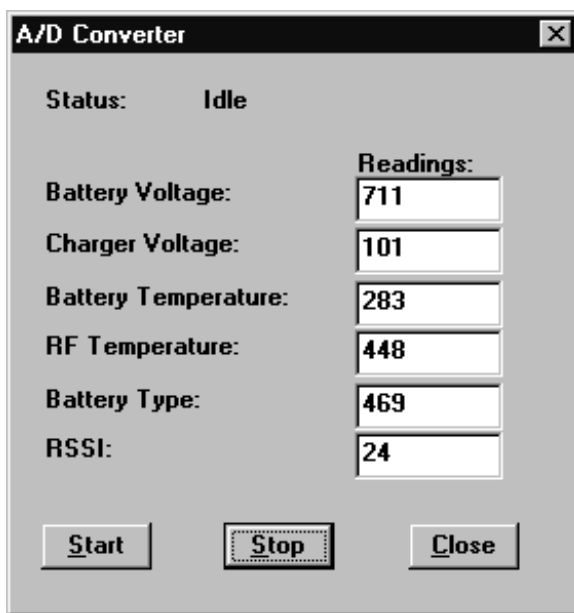
Exit (Alt+F4)

Selecting this option will shutdown the WinTesla program.

The Testing Menu



ADC Readings



This option allows the phone's ADC readings to be displayed. The readings are updated every few seconds. There may be some delay before the mouse or keyboard responds while running this test.

MBUS

Mbus displays the MCU software version.



AMPS / Base Band Tests

This screen is used when testing and troubleshooting the phone in AMPS mode. Below is an example screen.

AMPS / Baseband Testing

RF Controls

Power Level: 3
Channel: 380
Tx Freq: 836.40 MHz
Rx Freq: 881.40 MHz

Frequency

High
Mid
Low

Channel

Up Dn

Tone Controls

Supervisory Audio Tone: Off
Buzzer: Off
 Signaling Tone
 Vibrating

Audio Paths

Compander On
Tx Path: Mute
Rx Path: XE ar

Miscellaneous Controls

LCD Patterns: Off
 Back Lite ON

RX_AUDIO 22012 0 32767
TX_MOD 13357 0 32767
TX_LIM_ADJ 143 0 255
AFC 274 0 511

ADC Reading Mbus Test Quick Rx Test Help
Phone Identity RF Parameter Reset Phone Init Phone Close

RF Controls:

Power Level – Turns the transmitter on/off and sets power levels.

Channel – Changes the AMPS channel of the phone.

TX Freq: Displays the current Transmit Frequency.

RX Freq: Displays the current Receiver Frequency.

Frequency:

High – Sets the AMPS channel to the Highest Frequency according to the Frequency planning set in the “configure” menu.

Mid – Sets the AMPS channel to the Middle Frequency according to the Frequency planning set in the “configure” menu.

Low – Sets the AMPS channel to the Lowest Frequency according to the Frequency planning set in the “configure” menu.

Channel:

Up – Increments the channel selection by one.

Dn – Decrements the channel selection by one.

Tone Controls:

Allows computer control of Supervisory Audio Tone (SAT), buzzer, Signaling Tone (ST), and vibrating functions.

Audio Paths:

TX Path: – Allows the user to control the TX Audio path (options: Mute, Ear, External Ear).

RX Path: – Allows the user to control the Rx Audio path (options: Mute, Ear, External Ear).

Miscellaneous Controls:

Allows control of LCD patterns, call LED and back light.

Buttons:

ADC Reading

Opens the ADC reading screen.

Mbus Test

Tests the communication between the phone and the computer.

Phone Identity

Opens the Quick Receiver test screen.

RF Parameter

This function allows read the saved RF parameters (tuning values) from the phone.

Reset Phone

Resets the phone.

Init Phone

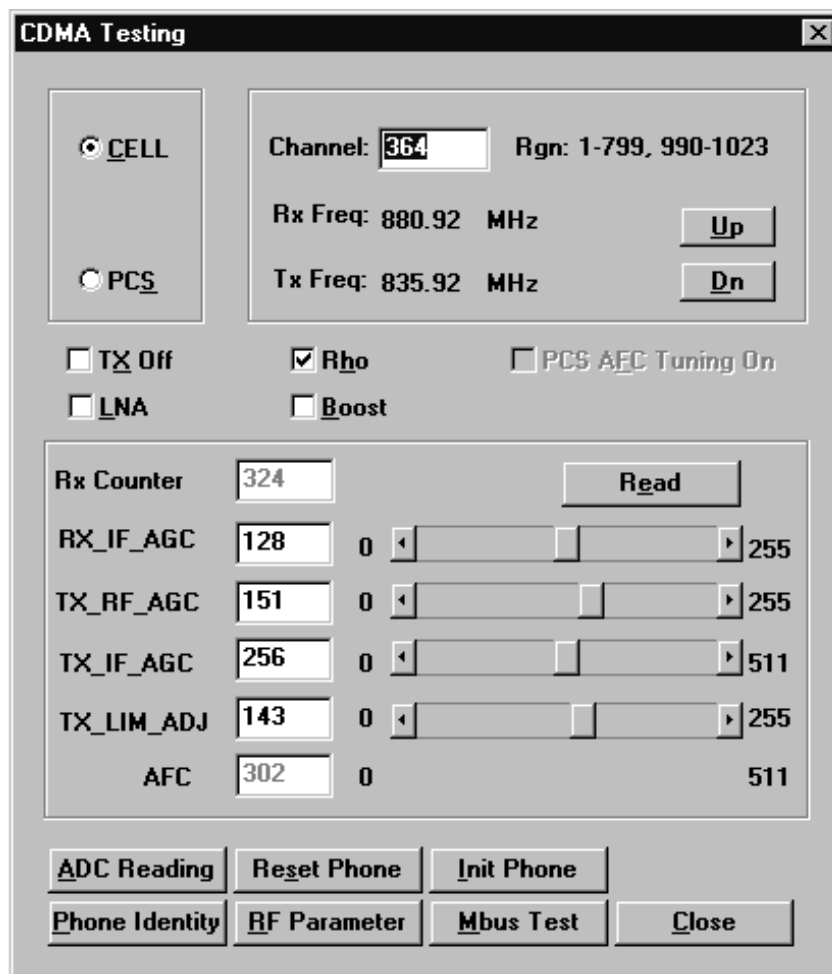
Initializes the phone.

Close

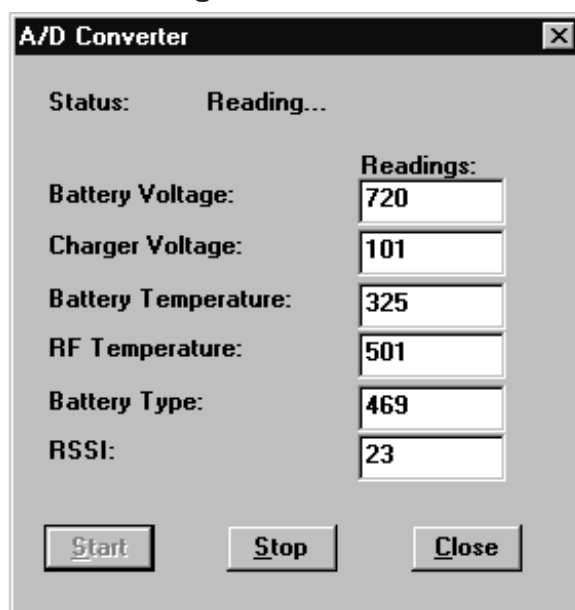
Exits the current screen.

CDMA Tests

This screen is used when testing and troubleshooting the phone in CDMA mode. Below is an example screen.

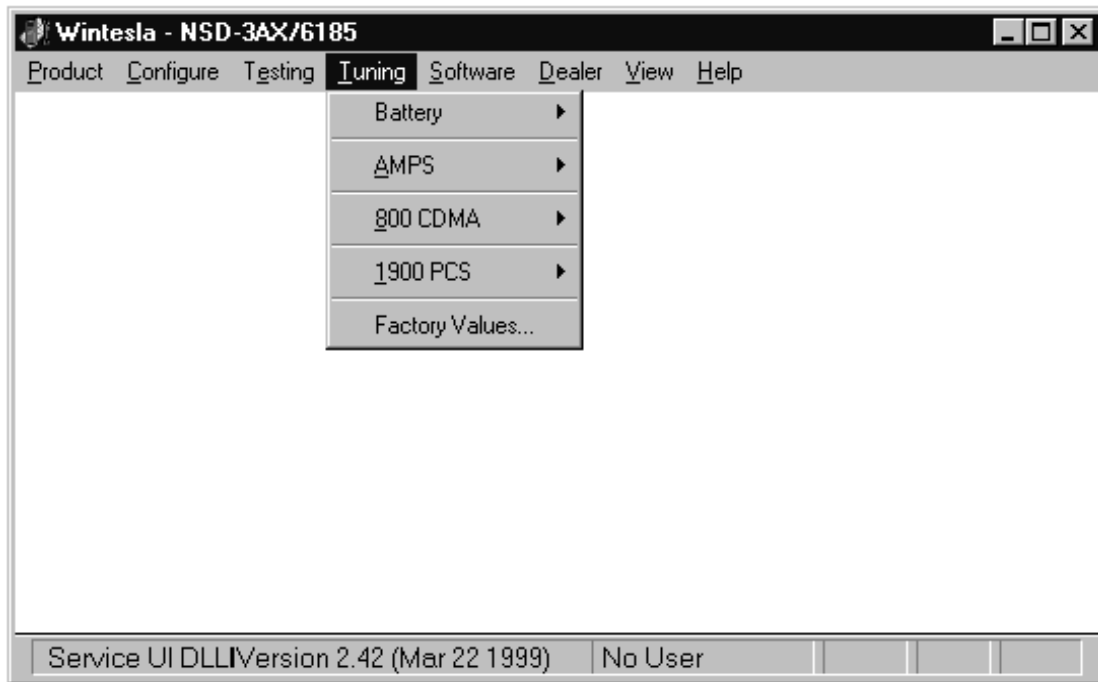


ADC Readings



This option allows the phone's ADC readings to be displayed. The readings are updated every few seconds. There may be some delay before the mouse or keyboard responds while running this test.

The Tuning Menu



Tuning Steps of Radio Unit

The Service Software program places the phone into the Local mode, in which the phone can be outwardly controlled via M2BUS interface.

The tuning values of the phone reside on the EEPROM. Before tuning, the Service Software reads these values and the user can change these values with tuning functions.

NOTE: During tuning, keep the following in mind:

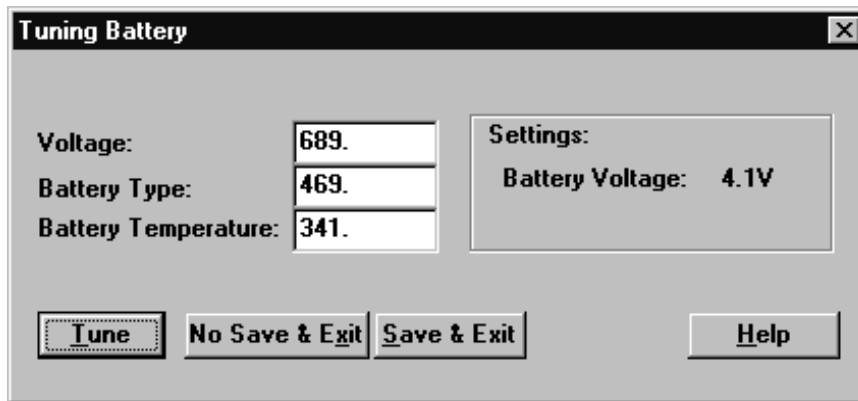
- Take care not to damage sensitive measuring instruments with excessive RF power.
- Carry out all tuning steps in the shortest possible time to avoid excessive heating of RF units.
- Perform all tuning steps in the order presented.
- Never try to mask a fault by tuning it out.

Accuracy of the Equipment during Measurement

- Power supply 1; nominal voltage $8.0V \pm 0.2V$, minimum current capacity 1.5A for service battery BBD-3.
- Power Supply 2; nominal voltage $4.1 \pm 0.1V$, minimum current capacity 1.5A for testing dummy battery BTD-3.
- Modulation analyzer; power level resolution 0.1dB, accuracy $\pm 0.5dB$. Frequency counter accuracy 0.1ppm ($\pm 80Hz$).

- RF generator; frequency resolution 10Hz amplitude resolution 0.1dB frequency stabilization ± 0.25 ppm.
- Spectrum analyzer; dynamic range 70dB, accuracy ± 1 dB (For power level measurement accuracy ± 0.5 dB).

Battery Tuning



Battery Voltage Tuning:

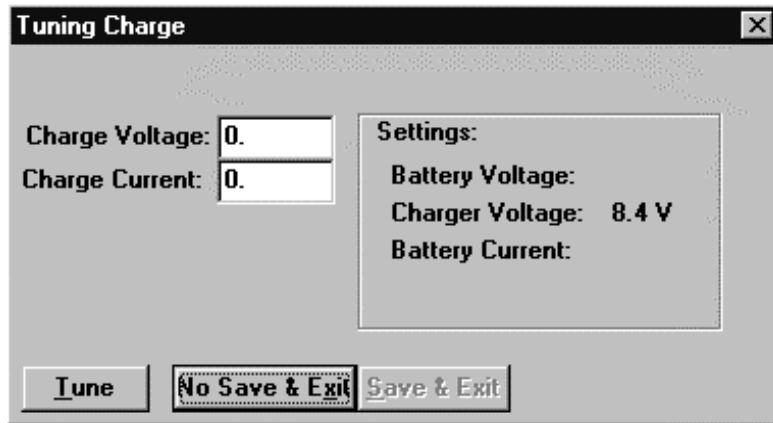
A reference value for the battery is calibrated by using BDD-3 service battery.

NOTE:

Calibration of the A/D converter channels as follows:

- Connect the cable SCB-3 from service battery to the charging connector. Apply +10.5V to the service battery.
- Select "Tuning > Battery > Tuning Battery.
- Select "Tune"
- The Program reads the voltage and current and displays the corresponding A/D reading fed to the phone via the VBATT line.
- Store this new value to the phone by pressing "Tune". Then "Save & Exit".

Charging Voltage and Current Tuning:



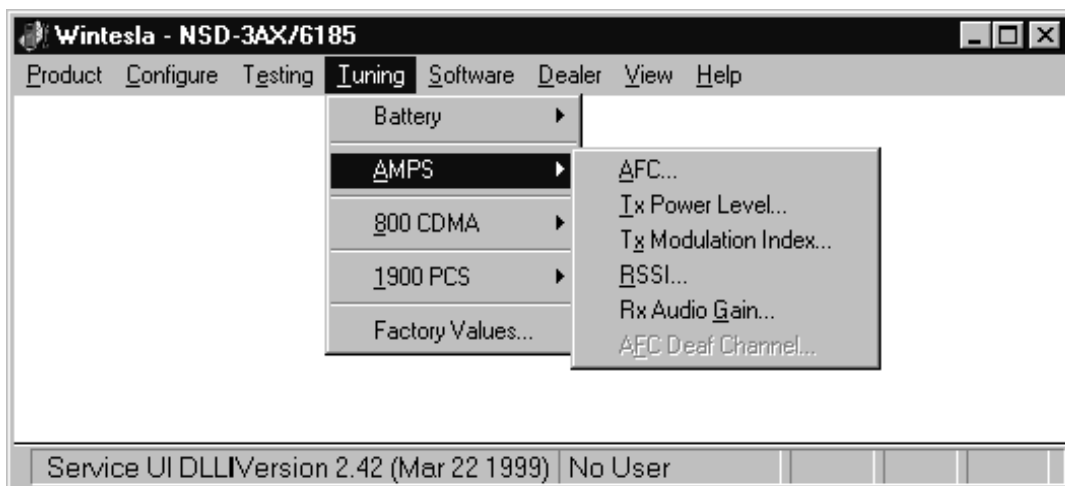
A reference value for the battery is calibrated by using BDD-3 service battery.

Calibration of the A/D converter channels as follows:

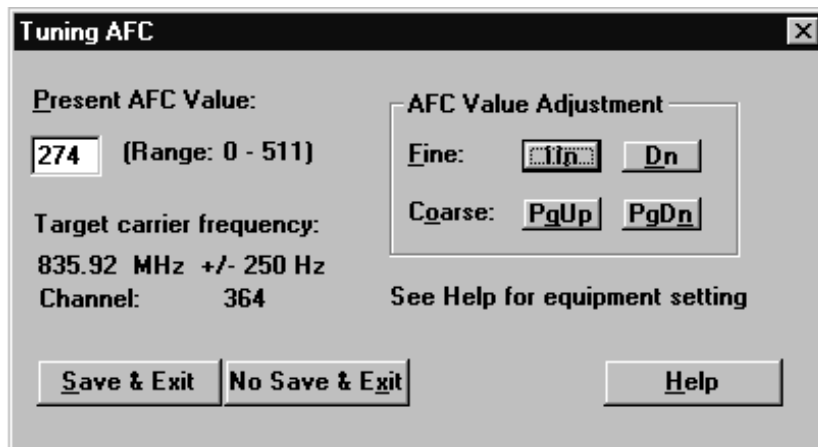
- Connect the cable SCB-3 from service battery to the charging connector. Apply +10.5V to the service battery.
- Select: Tuning > Battery> Tuning Charge”.
- The Program reads the voltage and current and displays the corresponding A/D reading fed to the phone via the VBATT line.
- Store this new value to the phone by pressing “Tune”. Then “Save & Exit”.

AMPS Tunings.

Not available for NSD-1F phone.



AFC (Automatic Frequency Control).



Spectrum Analyzer set up:

Set up spectrum analyzer as follows:

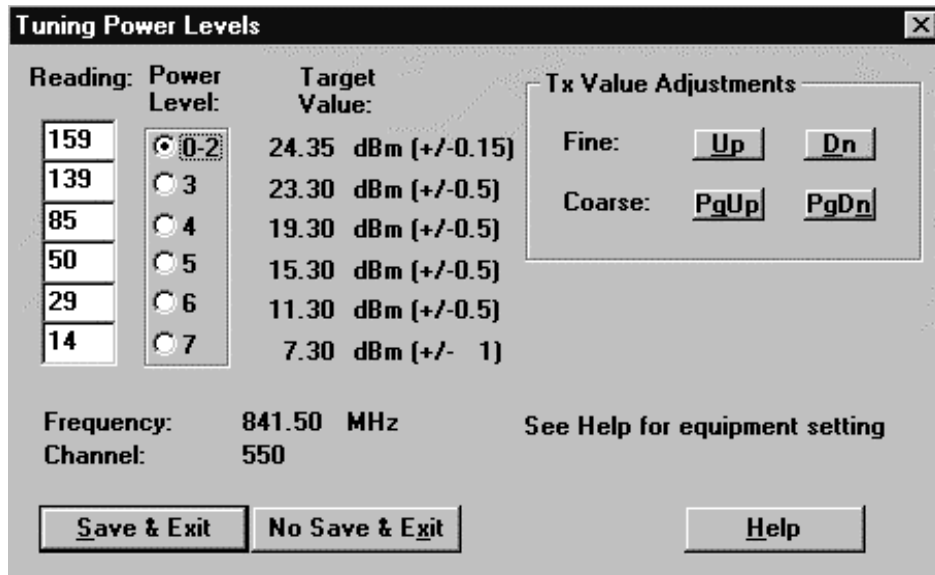
| | |
|----------------------------|----------------------------|
| Center frequency | Frequency in tuning window |
| Span | 20 KHz |
| Amplitude Reference level | 30 dBm |
| Attenuation | Auto |
| Amplitude level offset | 0 dB |
| Resolution bandwidth (RBW) | Auto |
| Video bandwidth (VBW) | Auto |
| Sweep time | Auto |
| Marker track | On |

Connect Spectrum Analyzer to phone's antenna connector.

Press PEAK SEARCH button if marker is not on signal's peak.

Tune using Up, Dn, PgUp and pgDn buttons until marker frequency is within target range.

Tx Power Level



Note: The default cable loss 0.7 dB is taken into account in the values. If some other cables are used please, input the new value by using frequency planning.

Note: The channel needs to be between 550–580.

AMPS Tuning—TX POWER LEVEL:

Set up spectrum analyzer as follows:

| | |
|----------------------------|---------------------|
| Center frequency | Use channel 550–580 |
| Span | 20 KHz |
| Amplitude Reference level | 30 dBm |
| Attenuation | Auto |
| Amplitude level offset | 0 dB |
| Resolution bandwidth (RBW) | Auto |
| Video bandwidth (VBW) | Auto |
| Sweep time | Auto |
| Marker track | On |

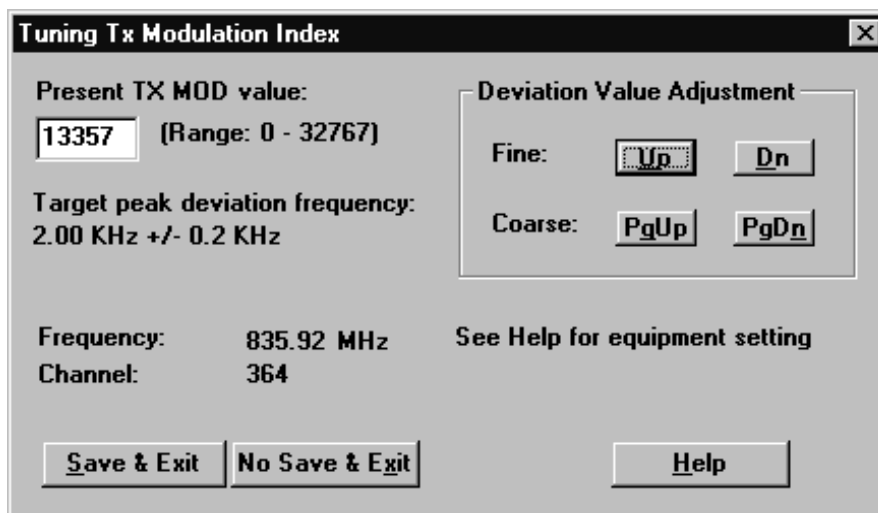
Connect Spectrum Analyzer to phone's antenna connector.

Press PEAK SEARCH button if marker is not on signal's peak.

Select power level to be tuned.

Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

Tx Modulation Index



AMPS Tuning—TX MODULATION INDEX:

Set up communication analyzer (HP8924, HP8920 etc) as follows:

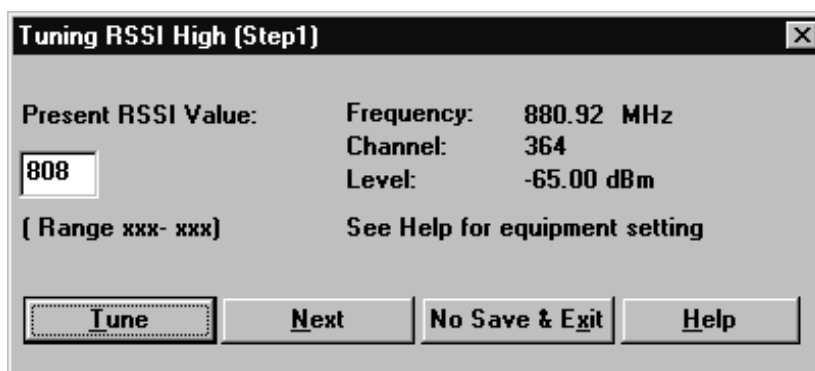
Select DUPLEX under Analog Screen.

| | |
|-------------|---------------------------------|
| Channel | Channel number in tuning window |
| IF filter | 15KHz |
| AF Anl in | FM Demod |
| Filter 1 | 300Hz HPF |
| Filter 2 | 6KHz BPF |
| De_amphasis | ON |
| Detector | +/- Max |

Connect communication analyzer's output to phone's antenna connector.

Tune using Up, Dn, PgUp and PgDn buttons until frequency deviation is within target range.

RSSI (Received Signal Strength Indication)



AMPS Tuning-RSSI Step 1

Set up communication analyzer (HP8924, HP8920 etc) as follows:

Select DUPLEX under Analog Screen.

| | |
|-----------------|---------------------------------|
| Level offset | Off |
| Channel | Channel number in tuning window |
| Amplitude | Level in tuning window |
| Audio freq | 1KHz |
| AF Anl out | FM |
| Freq. Deviation | 2.6KHz |

Connect communication analyzer's output to phone's antenna connector

Step 1. Press TUNE button. Press NEXT button to go to Step 2.

Step 2. Set communication analyzer output amplitude to new level.

Press TUNE button. The tuning value should be between 570...970.

AMPS Tuning-RSSI Step 2

Set up communication analyzer (HP8924, HP8920 etc) as follows:

Select DUPLEX under Analog Screen.

| | |
|-----------------|---------------------------------|
| Level offset | Off |
| Channel | Channel number in tuning window |
| Amplitude | Level in tuning window |
| Audio freq. | 1KHz |
| AF Anl out | FM |
| Freq. Deviation | 2.6KHz |

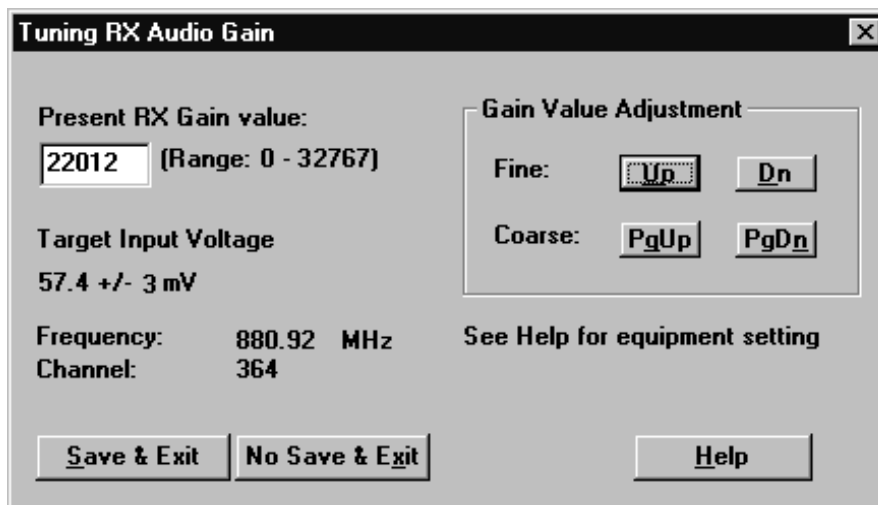
Connect communication analyzer's output to phone's antenna connector

Step 1. Press TUNE button. Press NEXT button to go to Step 2.

Step 2. Set communication analyzer output amplitude to new level.

Press TUNE button. The tuning value should be between 750...1050.

Rx Audio Gain



AMPS Tuning—RX AUDIO GAIN

Set up communication analyzer (HP8924, HP8920 etc) as follows:

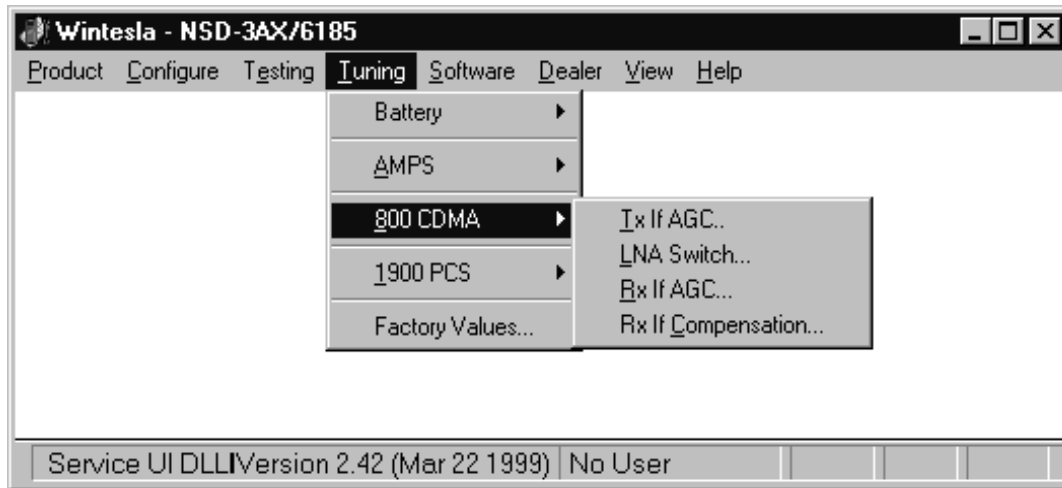
Select DUPLEX under Analog Screen

| | |
|-----------------|---------------------------------|
| Level offset | Off |
| Channel | Channel number in tuning window |
| Amplitude Level | -50 dBm |
| Audio freq | 1KHz |
| AF Anl out | FM |
| Freq. Deviation | 2.6KHz |
| AF Anl in | Audio in |
| Filter1 | C Message |
| Filter2 | 3 KHz LPF |
| De_amphasis | OFF |
| Detector | +/- Max |

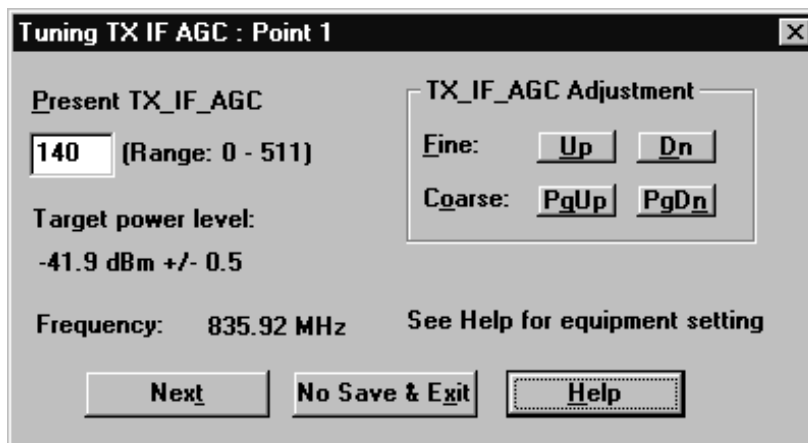
- Connect communication analyzer's output to phone's antenna connector.
- Connect phone's external EAR to communication analyzer's AUDIO IN.
- Tune using Up, Dn, PgUp and PgDn buttons until AF level is within target range.

800 CDMA Tunings.

Not available for NSD-1F phone.



TX IF AGC



CELL TUNING—TX_IF_AGC

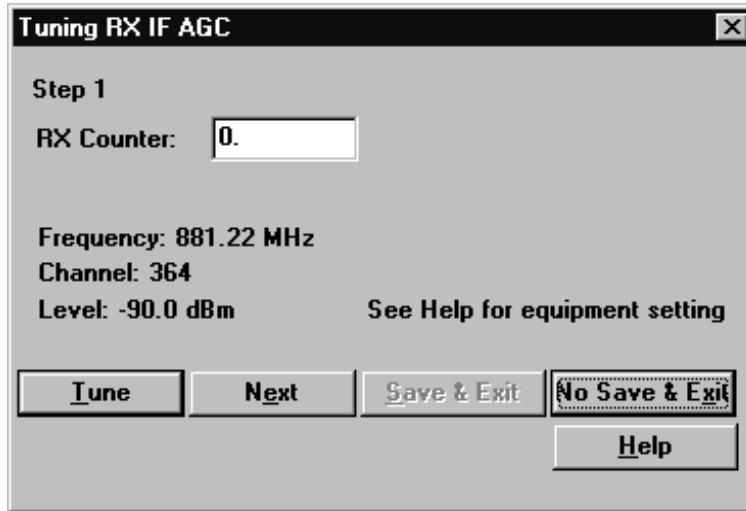
Point 1:

Set up spectrum analyzer as follows:

| | |
|----------------------------|----------------------------|
| Center frequency | Frequency in tuning window |
| Span | 30 MHz |
| Amplitude Reference level | 10 dBm |
| Attenuation | Auto |
| Amplitude level offset | 0 dB |
| Resolution bandwidth (RBW) | 1 MHz |
| Video bandwidth (VBW) | 300 Hz |

Press TUNE button to tune.

RX IF AGC



CELL TUNING-RX IF AGC

Steps 1,2,3...

Set up communication analyzer as follows:

Select DUPLEX under Analog Screen.

Select FREQUENCY in RF DISPLAY under CONFIG.

Level offset Off

Generator frequency Frequency in tuning window

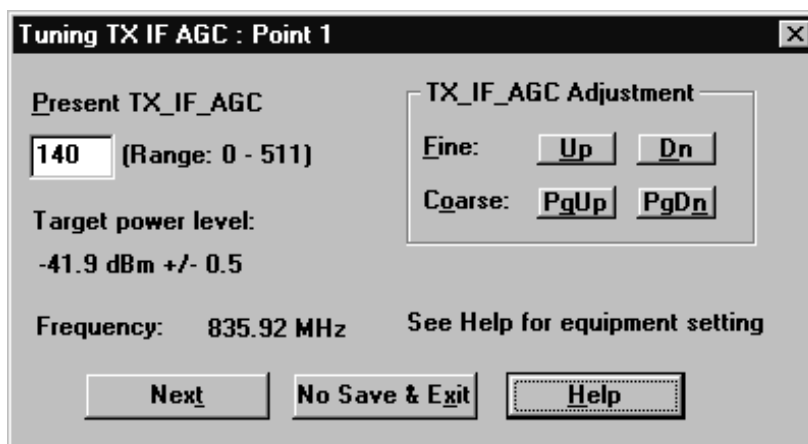
Amplitude Level in tuning window

Connect communication analyzer's output to phone's antenna connector.

Press TUNE button to tune.

Press NEXT button to go to next step. Repeat process with different amplitudes.

TX IF AGC



CELL TUNING—TX_IF_AGC

Point 1:

Set up spectrum analyzer as follows:

| | |
|----------------------------|----------------------------|
| Center frequency | Frequency in tuning window |
| Span | 30 MHz |
| Amplitude Reference level | 10 dBm |
| Attenuation | Auto |
| Amplitude level offset | 0 dB |
| Resolution bandwidth (RBW) | 1 MHz |
| Video bandwidth (VBW) | : 300 Hz |
| Sweep time | Auto |
| Marker track | On |

Connect Spectrum Analyzer to phone's antenna connector.

Press PEAK SEARCH button if marker is not on signal's peak.

Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

Point 2:

Keep spectrum analyzer setup unchanged.

Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

TX_LIM_ADJ tuning:

Make following change to spectrum analyzer setup:

Amplitude Reference Level: 30 dBm

For each new frequency, press PEAK SEARCH button if marker is not on signal's peak.

Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

LNA Switch



CELL TUNING—LNA GAIN SWITCH

Set up communication analyzer as follows:

Select DUPLEX under Analog Screen.

Select FREQUENCY in RF DISPLAY under CONFIG.

Level offset Off

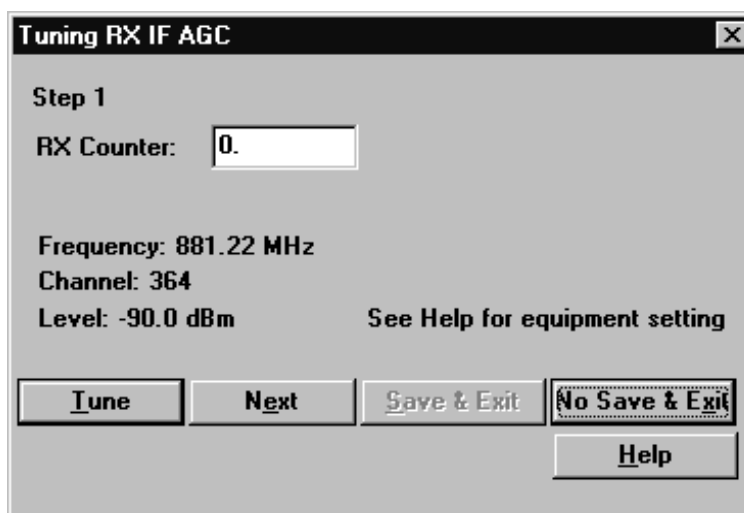
Generator frequency Frequency in tuning window

Amplitude Level in tuning window

Connect communication analyzer's output to phone's antenna connector.

Press TUNE button to tune.

RX IF AGC



CELL TUNING—RX IF AGC

Steps 1,2,3...

Set up communication analyzer as follows:

Select DUPLEX under Analog Screen.

Select FREQUENCY in RF DISPLAY under CONFIG.

Level offset Off

Generator frequency Frequency in tuning window

Amplitude Level in tuning window

–Connect communication analyzer's output to phone's antenna connector.

–Press TUNE button to tune.

–Press NEXT button to go to next step. Repeat process with different amplitudes.

RX IF Compensation



CELL TUNING—RX_IF FREQ COMPENSATION

Set up communication analyzer as follows:

Select DUPLEX under Analog Screen.

Select FREQUENCY in RF DISPLAY under CONFIG.

Level offset Off

Generator frequency Frequency in tuning window

Amplitude Level in tuning window

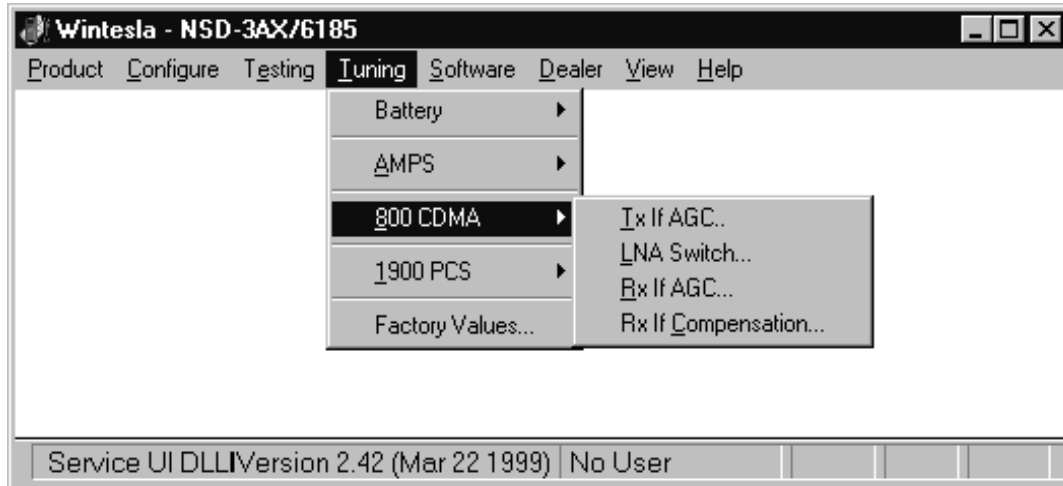
– Connect communication analyzer's output to phone's antenna connector.

– Press TUNE button to tune.

– Press NEXT button to go to next step. Repeat process with different frequencies.

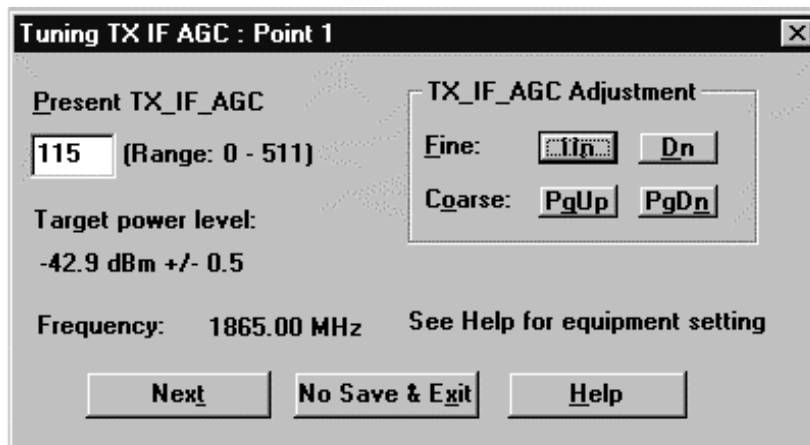
1900 MHz CDMA Tunings.

Not available for NSD-1/3G phones.



Note: For NSD-1F phone the AFC tuning needs to be done at 1900MHz.

Tx IF AGC (1900MHz)



PCS TUNING—TX_IF_AGC

Point 1:

Set up spectrum analyzer as follows:

| | |
|----------------------------|----------------------------|
| Center frequency | Frequency in tuning window |
| Span | 65 MHz |
| Amplitude Reference level | 10 dBm |
| Attenuation | Auto |
| Amplitude level offset | 0 dB |
| Resolution bandwidth (RBW) | 1 MHz |

Video bandwidth (VBW) 300 Hz
Sweep time Auto
Marker track On

- Connect Spectrum Analyzer to phone's antenna connector.
- Press PEAK SEARCH button if marker is not on signal's peak.
- Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

Point 2:

- Keep spectrum analyzer setup unchanged.
- Tune using Up, Dn, PgUp and pgDn buttons until marker power is within target range.

Tuning Max Power, TX_LIM_ADJ tuning: (1900)



TX_LIM_ADJ tuning:

Make following change to spectrum analyzer setup:

- Amplitude Reference level 30 dBm
- For each new frequency, press PEAK SEARCH button if marker is not on signal's peak.
- Tune using Up, Dn, PgUp and PgDn buttons until marker power is within target range.

LNA GAIN SWITCH (1900MHz)



PCS TUNING—LNA GAIN SWITCH

Set up communication analyzer as follows:

Select DUPLEX under Analog Screen.

Select FREQUENCY in RF DISPLAY under CONFIG.

Level offset Off

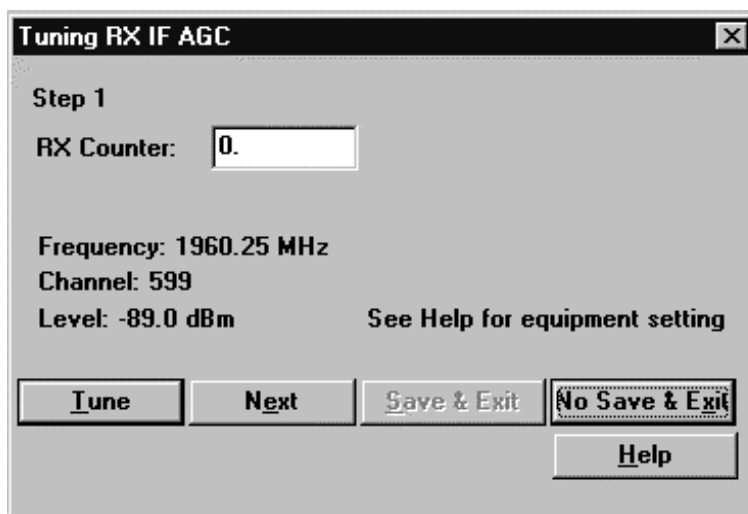
Generator frequency Frequency in tuning window

Amplitude Level in tuning window

– Connect communication analyzer's output to phone's antenna connector.

– Press TUNE button to tune.

RX IF AGC (1900MHz)



PCS TUNING—RX IF AGC

- Set up communication analyzer as follows:
- Select DUPLEX under Analog Screen.
 - Select FREQUENCY in RF DISPLAY under CONFIG.
 - Level offset Off
 - Generator frequency Frequency in tuning window
 - Amplitude Level in tuning window
- Connect communication analyzer's output to phone's antenna connector.
 - Press TUNE button to tune. Press NEXT button to go to next step.
- Repeat process with different amplitudes.

Rx If Compensation (1900MHz)



RX_IF FREQ COMPENSATION

- Set up communication analyzer as follows:
- Select DUPLEX under Analog Screen.
 - Select FREQUENCY in RF DISPLAY under CONFIG.
 - Level offset Off
 - Generator frequency Frequency in tuning window
 - Amplitude Level in tuning window
- Connect communication analyzer's output to phone's antenna connector.
 - Press TUNE button to tune.
 - Press NEXT button to go to next step. Repeat process with different frequencies

Factory Values

This function makes possible save the factory default tuning values to the phone. This function is needed only if the all tuning values have been lost. After this all the tuning are needed to do manually.

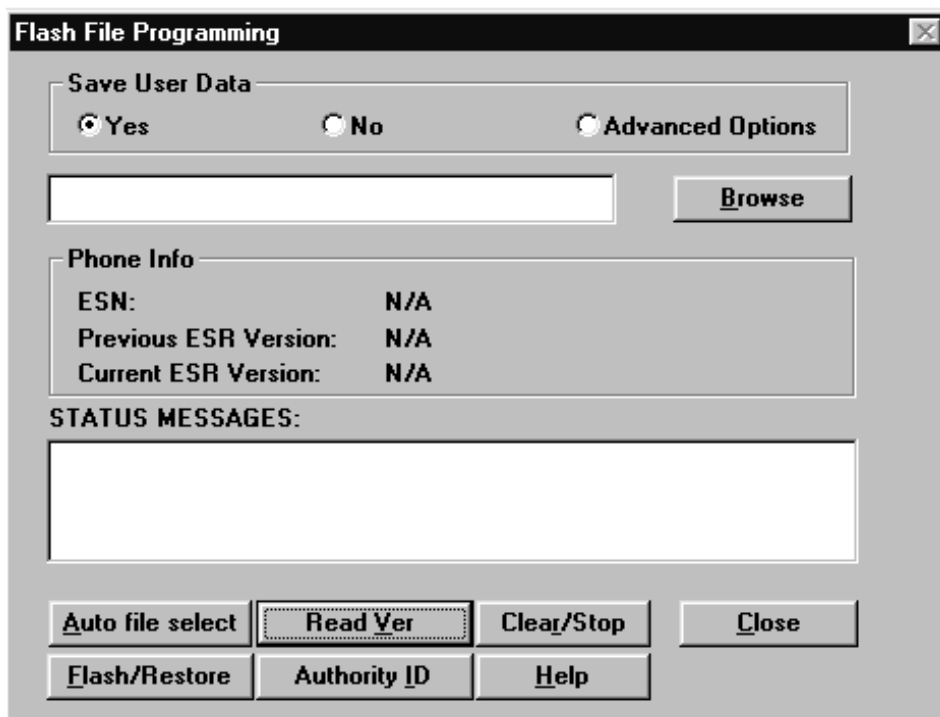
The Software Menu



This command is used for flashing new software into the phone. While flashing the phone, user is shown the flashing progress towards completion.

Status dialog box is shown during flashing. After the phone is flashed Authority ID is set to the phone.

Flash File Programming



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

Save User Data:

This option decides if user data (end user settings) will be kept.

Yes The user data will be saved (recommended).

No Select if there is no need to save user data (new phone).

Advanced Options Select only in special cases.

BUTTONS:

Auto File Select

Wintesla will find a correct image for a connected phone according to its hardware ID and product code.

Browse

Click this button to select a flash image.

Read Ver

Displays software version of the phone.

Clear/Stop

Clear the flash window. Stops saving user data during flashing.

Flash/Restore

Flashing a software into the phone or restore data to a phone.

Authority ID

Programs the authority ID. By default Authority ID is programmed automatically after flashing. There is no need to do it manually.

Close button

Closes the dialog button and *does not* start flashing.

Procedure to Flash a Phone

1. Decide Which Options to use

There are 3 options, Yes, No and Advanced options. Yes will keep all the user data. No will erase all user data. Advanced option let you decide what kind of data you want to keep during flash.

2. Select Flash image (or let Wintesla decide for you)

You can select a flash file by clicking the Browse button. Or you can leave the file name field empty and let Wintesla decide which flash image to use. Please note this requires a phone specific .cfg file be put into ../misc directory.

3. Flash

FAQs:

How to select flashing device?

Go Configure Menu/FLS-X and check Use Fls-x for POS, otherwise uncheck it

If the phone is totally dead. Go to the Advanced Options and select Flash Dead Phone then flash the phone.

What if error occurs during the user data saving?

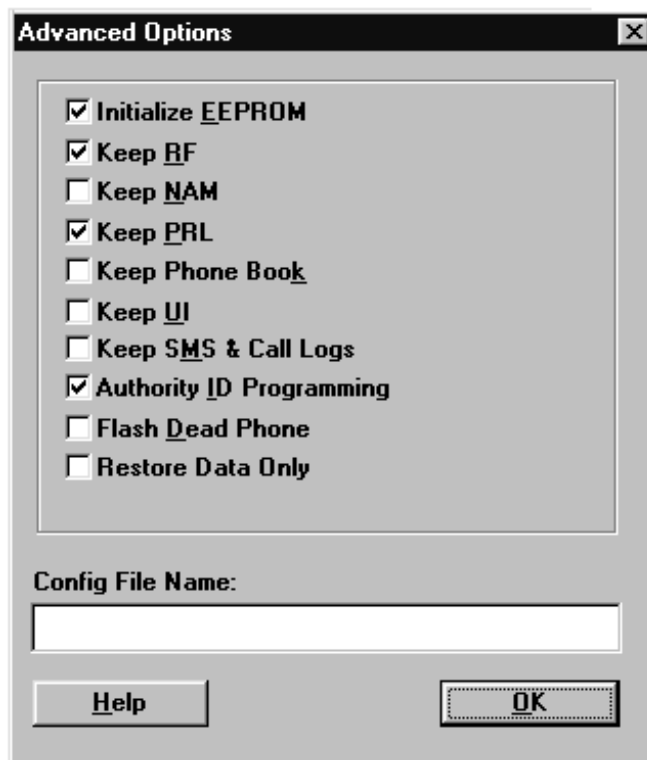
No damage is done to your phone at this stage. So go ahead and flash it again.

What if error occurs during flashing?

If the phone is dead, go to the Advanced Options and select Flash Dead Phone and flash the phone again. EEPROM values shouldn't be damaged at this stage. If the phone isn't dead, EEPROM values shouldn't be changed yet. Just flash the phone again.

What if error occurs after EEPROM resetting?

This means that the EEPROM data is damaged. But if you selected Yes to Save User Data, all the user data is saved on the disk. Check your phone. If the phone is dead, select Flash Dead Phone then flash it to get the phone to work. Restore all the data without flash. To do this, go to advanced options, and select Restore Data Only.

Advanced Options**Initialize EEPROM**

This option will cause phone data resetting to factory value, if no other user data is selected to keep (for example, Keep RF). If one of the user data is selected to keep, after flashing and resetting phone data to factory value, the data will be loaded back.

Keep RF

This option will keep the RF tuning data even if Initialize EEPROM is selected.

Keep NAM

This option will keep the NAM data even if Initialize EEPROM is selected.

Keep PRL

This option will keep the PRL even if Initialize EEPROM is selected.

Keep Phone Book

This option will keep the Phone book (SCM) even if Initialize EEPROM is selected.

Keep UI

This option will keep the UI settings even if Initialize EEPROM is selected.

Keep SMS & Call Logs

This option will keep the SMS (short messages) and Call Logs even if Initialize EEPROM is selected.

Authority ID programming

This option causes the Authority ID being programmed after flashing.

Flash Dead Phone

Select only if a totally dead phone is involved. When this option is on all other options except Authority ID programming will be ignored.

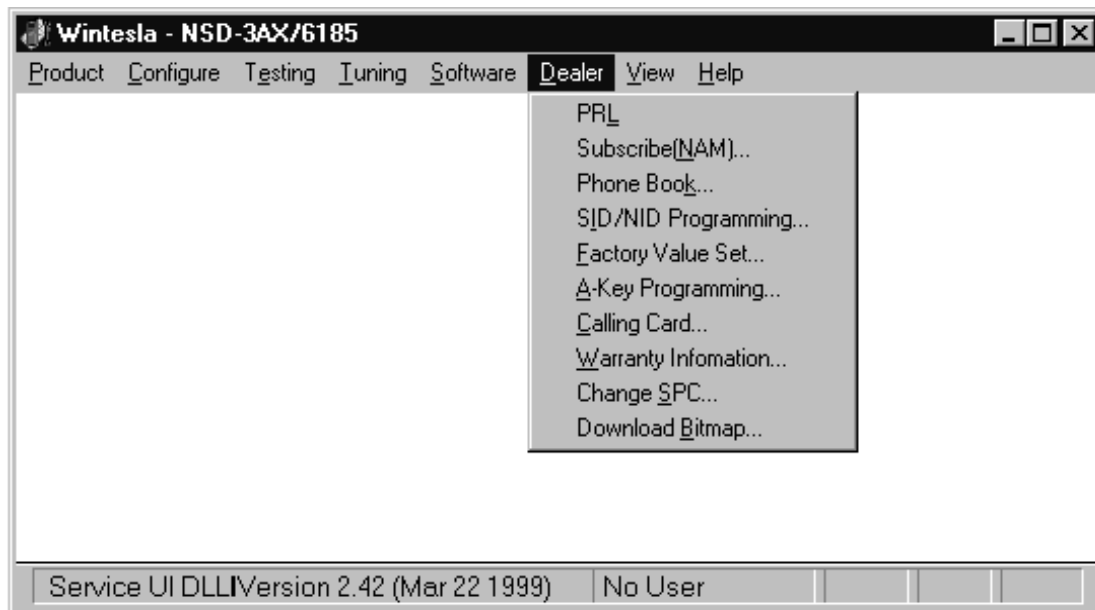
Restore Data Only

If an error happens during the flashing, WinTesla will quit the flashing session. Saved data will not be removed and can be restored by selecting this option. All other choices need to be kept the same as that in the flash session.

Default option setting

This option is recommended. Especially when you are not familiar with all the options.

The Dealer Menu



Dealer menu briefly:

PRL = Preferred Roaming List: Makes it possible to load a new PRL to the phone.

Subscribe (NAM): Makes possible to program the phone number (NAM) to the phone. It includes also some other settings like SID and paging channel settings.

Phone Book: This function allows you to create, edit or load the "phone-book" to the phone or download from the phone to personal computer.

SID/NID Programming: For programming the SID and NID settings to the phone.

Factory Value Set: Makes it possible to reset the phone settings, like the NAM Information, Short Code Memory or the personal UI settings, and ringing tones, as the default.

A-Key programming: Makes it possible to save the A-KEY (Authentication Key) to the phone.

Calling Card: This function makes it possible to create a calling card setting.

Warranty Information: This menu is for service purposes. It includes, for example, warranty information and manufacturing date reading.

Change SPC: This is needed if SPC (lock code) needs to be changed (Not available in dealer use).

Download Bitmap: You can download a bitmap image with resolution of 84x48 dpi.

PRL (Preferred Roaming List)

Preferred Roaming List: You can load a new PRL to the phone. The IS-683A and Sprint format roaming lists are supported.

Subscriber Data (NAM) Programming

Subscriber Data (NAM) Programming is designed for programming the subscribed based information to the phone. You can program the phone

number (NAM) to the phone. It includes also some other settings like SID (System ID) and paging channel settings.

NAM programming is also possible to do by the phone keypad by going to NAM programming mode first. That is accessible by keypad entry *3001#12345#. The limits of the values are mentioned in brackets.

NOTE: The program does not support the fields marked in gray.

Buttons:**NAM Selection**

Selects NAM contents to be displayed.

Load File

Prompts user to select a file containing NAM information.

Save File

Allows user to save screen contents to a file.

Read File

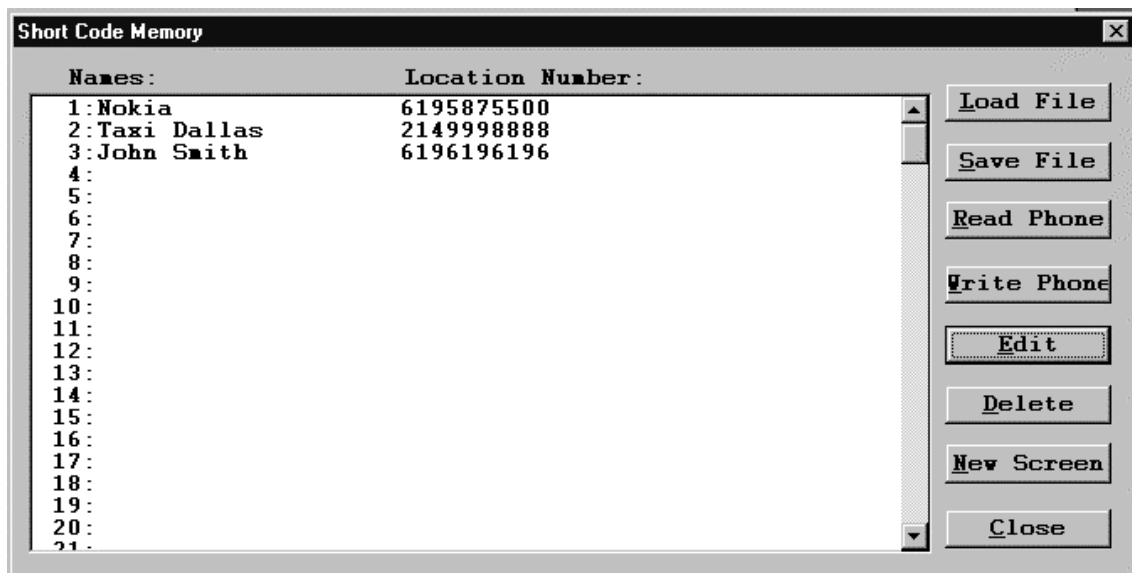
Reads phone contents to screen.

Write Phone

Write contents of screen to phone.

Set Default

Sets selection as default.

Phone Book (Short Code Memory)

This option allows the user to change the "phone book" numbers (also known as short code memory).

Buttons:**Load File**

Prompts user to select a file containing Short Code Memory information.

Save File

Allows the user to save the screen contents to a file.

Read Phone

Reads the phone content to screen.

Write Phone

Writes the content of the screen to the phone.

Edit

Edits the highlighted entry.

Delete

Deletes the highlighted entry.

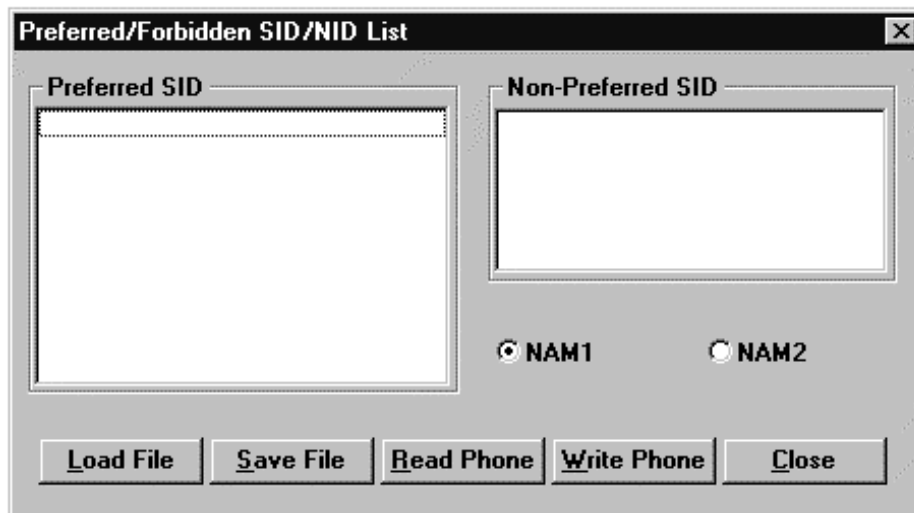
New Screen

Clears all entries.

Close

Closes the Short Code Memory screen.

SID/NID Programming (Preferred /Forbidden SID/NID)



This option allows you to edit the SID list. Highlight entry using the <TAB> key and press <Enter> to edit.

Buttons:

Load File

Prompts the user to select a file containing SID information.

Save File

Allows the user to save screen contents to a file.

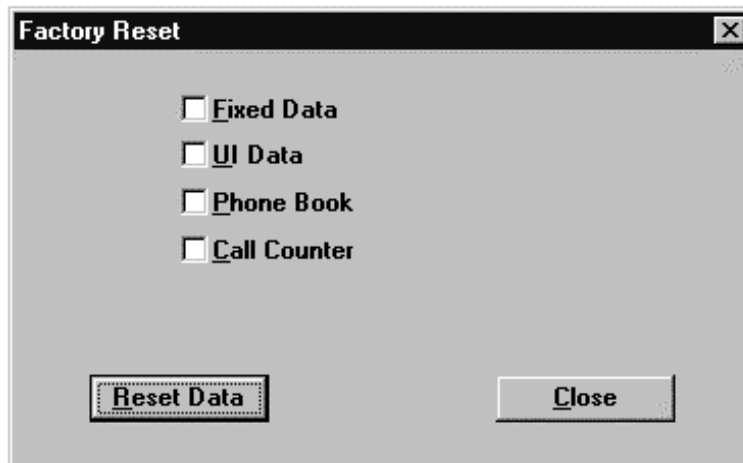
Read Phone

Reads the phone content to screen.

Write Phone

Writes the content of the screen to phone.

Factory Reset



Fixed Data

This option will reset the NAM information to original factory values.

UI Data

This option will reset the user interface data.

Phone Book

This option will reset the short code memory data.

Call Counter

This option will reset the call counter.

Reset Data

This option allows you to reset a phone's settings to their initial (factory) default values. The following list is a subset of data, which can be reset to factory defaults:

NOTE: This option will NOT erase any calibrated values within the phone.

Default NAM Parameter Settings

These settings apply to both NAM1 and NAM2 unless stated otherwise.
Values are shown in decimal format.

| Parameter | Default Setting | Valid Values |
|--|---|---|
| Own Number (Phone No. associated with NAM, more specifically known as MIN). | 000 000 XXXX (where XXXX is the last 4 digits of ESN) | 10 digits; |
| Home SID List | SID 1 = Home System ID; All other SIDs are empty. | 1 – 32767 for each SID. Up to 4 unique SIDs. |
| Access Overload Class | Last number of MIN | 0 – 15 |
| NAM Status | NAM 1: Enabled NAM 2: Disabled | Enabled/Disabled |
| Group ID | 10 | 0 – 15 |
| Access Method | 1 | 0, 1 |
| Local Use Mark | 1 | 0, 1 |
| Country Code | 0 | 0 – 999 |
| Network Code | 0 | 0 – 99 |
| Directory Number (Phone No. associated with NAM, more specifically known as MDN) | 000 000 XXXX (where XXXX is the last 4 digits of ESN) | 10 digits; |
| AMPS Paging Channel | If the HOME SYSTEM ID setting is odd, the A type channel default is used. If it is even, the B type paging channel default is used. A type channel: 333 B type channel: 334 | 0 – 2047 |
| Primary CDMA Channel A | 283 | 1 – 311 |
| Secondary CDMA Channel A | 691 | 689 – 694 |
| Primary CDMA Channel B | 384 | 356 – 644 |
| Secondary CDMA Channel B | 777 | 739 – 777 |
| Emergency Numbers | 911, *911, empty. | |
| Lock Code | 1234 | |
| Security Code | 12345 | |

A-Key Programming



This option allows you to program the Authentication key (A-Key) of the phone. The A-key can *never* be read from the phone, only programmed to the phone over writing the previous value.

To program the A-key a valid A-key plus a valid checksum must be entered as one complete number.

– Valid A-Key number = 6 to 20 digits (e.g. XXXXXXXXXXXX)

– Valid checksum = 6 digits (e.g. YYYYYYY)

Example:

A-Key Entry would be XXXXXXXXXXXXYYYYYY

Buttons:

Write Selected

Writes the highlighted selection to the selected NAM in the phone if the A-Key is valid. Otherwise an error message is displayed.

Write All

Writes both the A-Key numbers to the corresponding NAM of the phone if the A-Key is valid. Otherwise an error message is displayed.

Calling Card

The screenshot shows a dialog box titled "Calling Card Numbers". At the top, there are four radio buttons labeled "Card1", "Card2", "Card3", and "Card4", with "Card1" selected. Below this is a section with four input fields: "Access Method" (a dropdown menu showing "Access Code / Phone No. / Card No."), "Card Name" (containing "AT&T" and a "Prefix" field), "Card Number" (containing "9998887777"), and "Access Number" (containing "1800 999 8888"). At the bottom of this section are two more input fields: "International Prefix:" and "National Prefix:". At the very bottom of the dialog are three buttons: "Read Phone", "Write Phone", and "Close".

This option allows the user to program the calling card information into the phone.

Access Method

Allows user to select the appropriate method for connecting with the service provider's network according to the calling card requirements.

Please contact your service provider for details or the calling card instructions. Changing this setting causes the phone to execute the sequence of events according to the option chosen.

Card Name

Allows the user to change the name of the calling card display in the phone's menu.

Card Number

Also known as "Card ID", this number is the actual calling card number issued by the service provider.

Access Number

The number used to access the service provider's network. Typically a toll free number.

Warranty Information

The screenshot shows a window titled "Warranty Information" with a close button in the top right corner. The window contains the following fields and controls:

- Original ESN:** An empty text input field.
- Manufacturing month:** An empty text input field.
- Repair month:** A text input field containing the value "0000".
- Month programmed:** A text input field containing the value "1298".
- Transfer Flag:** A checkbox that is currently unchecked.
- Buttons:** Four buttons are located at the bottom: "Read Phone", "Write Phone", "Reset Data", and "Close".

This menu is for service purposes. This menu includes warranty information and manufacturing date reading.

Original ESN:

The ESN (electrical serial number) is used only for warranty tracking purposes.

Manufacturing month:

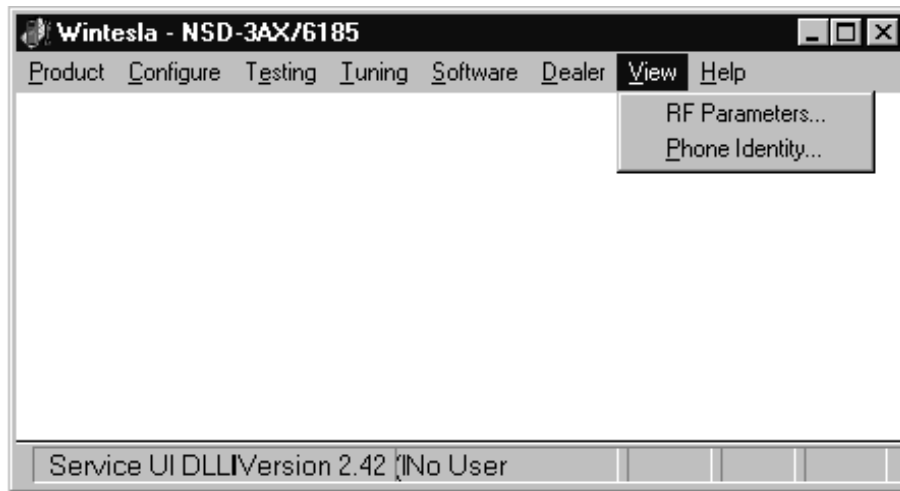
Shows the manufacturing month and year; the format is: MMYYY.

Repair month:

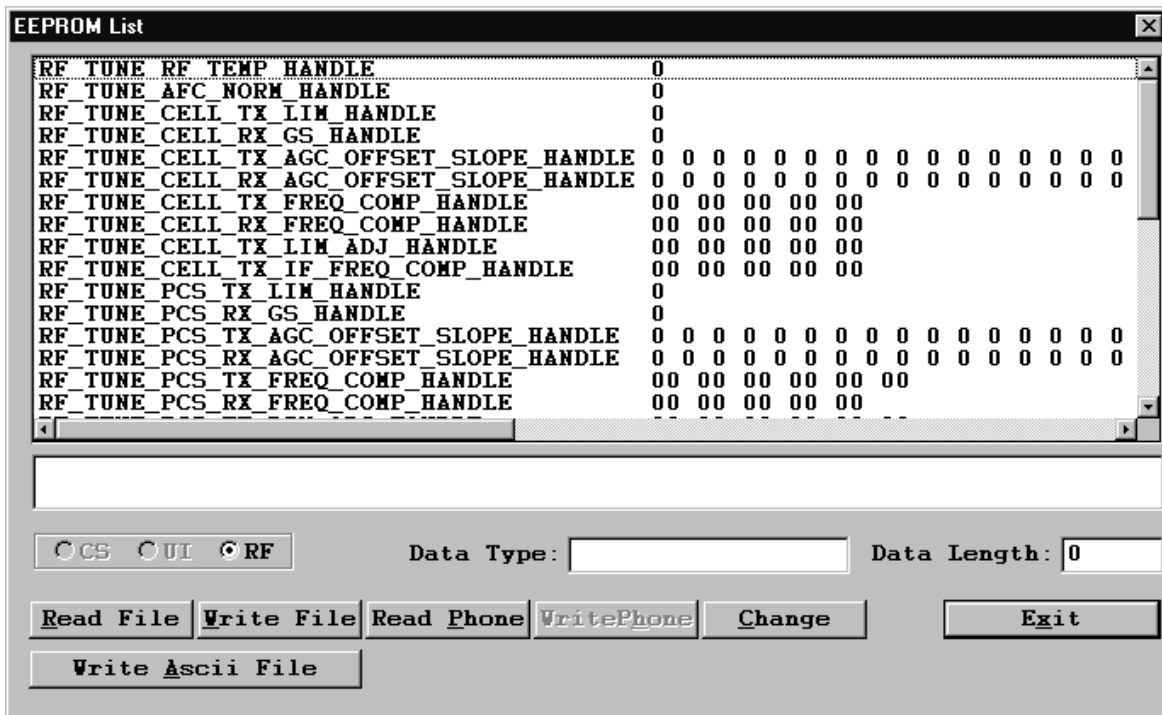
Can read and write the Repairing month.

Month programmed: Possible to write (only once) and read the programming month (when the phone has been taken to use).

The View Menu



RF Parameters (used only for Special Service purposes)



Phone Identity

The screenshot shows a dialog box titled "Phone Identity" with the following fields:

| | | | |
|-------------------|--|--------------------|---------|
| MCU SW Version: | V 983_f350b6 12/09/1998 NSD-3AXI(c)NMP | | |
| Flash SW Version: | 983_f350b6 12/09/1998 NSD-3AXI(c)NMP | | |
| Serial Number: | 156-3173168 | Production Number: | |
| CDSB Version: | | Hardware Version: | 2910 |
| Product Code: | 0501121 | Order Number: | 0000000 |
| DSP ROM Version: | | DSP Flash Version: | |

OK

By using this menu you can read:

- The phone Flash SW version
- Serial Number (=ESN)
- Product Code
- Hardware Version
- Ordering Number (if used)

NOTE: The fields marked gray are not available.

The Help Menu

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 help facility. Refer to the Windows manual for detailed description on the Windows Help.

Mouse Cursors

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

During time consuming tasks e.g. communication to phone, an hourglass will be 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 hourglass 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,X | <u>E</u> xit Application | NMP |
| Alt+C | <u>C</u> onfigure | NMP |
| Alt+C,O | <u>O</u> ptions | NMP |
| Alt+C,D | <u>D</u> irectories | NMP |
| Alt+C,S | <u>B</u> uses | NMP |
| Alt+C,D | <u>D</u> irectories | NMP |
| Alt+C,F | <u>F</u> aultlog | NMP |
| Alt+C,N | <u>F</u> ast <u>N</u> AM | NMP |
| Alt+C,G | <u>G</u> PIB instruments (disabled) | NMP |
| Alt+C,M | <u>M</u> PWS Swap | NMP |
| Alt+C,L | <u>L</u> abel Printing | NMP |
| Alt+C,F | Frequency <u>P</u> lanning | NMP |
| Alt+C,1 | FLS- <u>1</u> | NMP |
| Alt+E | <u>T</u> esting Menu | NMP |
| Alt+E,D | <u>A</u> DC Readings | NMP |
| Alt+E,P | <u>P</u> DM Register Control | NMP |
| Alt+E,A | <u>A</u> MPS/Baseband Tests | NMP |

| | | |
|---------|--|-----------|
| Alt+E,C | <u>C</u> DMA Tests | NMP |
| Alt+E,M | Enable <u>A</u> MPS Mode Troubleshooting | NMP |
| Alt+E,E | Enable <u>C</u> ELL Mode Troubleshooting | NMP |
| Alt+E,S | Enable <u>P</u> CS Mode Troubleshooting | NMP |
| Alt+E,T | Disable Mode <u>T</u> roubleshooting | NMP |
| Alt+T | <u>T</u> uning Menu | NMP |
| Alt+T,A | <u>A</u> MPS | NMP |
| Alt+T,8 | <u>8</u> 00 CDMA | NMP |
| Alt+T,1 | <u>1</u> 900 PCS | NMP |
| Alt+S | <u>S</u> oftware Menu | NMP |
| Alt+S,F | <u>F</u> lash | NMP |
| Alt+D | <u>D</u> ealer Menu | NMP |
| Alt+D,L | <u>P</u> RL | NMP |
| Alt+D,N | Subscribe(<u>N</u> AM) | NMP |
| Alt+D,K | Phone <u>B</u> ook | NMP |
| Alt+D,I | <u>S</u> ID/NID Programming | NMP |
| Alt+D,F | <u>F</u> actory Value Set | NMP |
| Alt+D,A | <u>A</u> -Key programming | NMP |
| Alt+D,C | <u>C</u> alling Card | NMP |
| Alt+D,W | <u>W</u> arranty Information | NMP |
| Alt+D,S | Change <u>S</u> PC | NMP |
| Alt+D,B | <u>D</u> ownload Bitmap | NMP |
| Alt+V | <u>V</u> iew Menu | 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 | <u>A</u> bout WinTesla | NMP |

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.

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 boxes will contain the following entities:

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

Common Dialog Boxes

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

Note Message Box

When the user has made an illegal selection, a *Note Message Box* dialog will be opened and message text is displayed. The 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 exclamation point–icon.



The dialog box 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 a *query message box*. A query dialog box is recognized by the ?–icon.



The dialog box 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 is the same as in the Note dialog box.

Error Message Box

Error message dialog boxes use the Stop-icon. When a "Stop"-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 will also contain an OK button and a Help button.

OK button (default key):

Acknowledges 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 below in the section – *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 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 should be limited and carefully considered. The use of radio 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 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 should only be queried, if the settings or values accepted will over-write data that CAN NOT be reproduced. A grayed **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. 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 grayed **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.

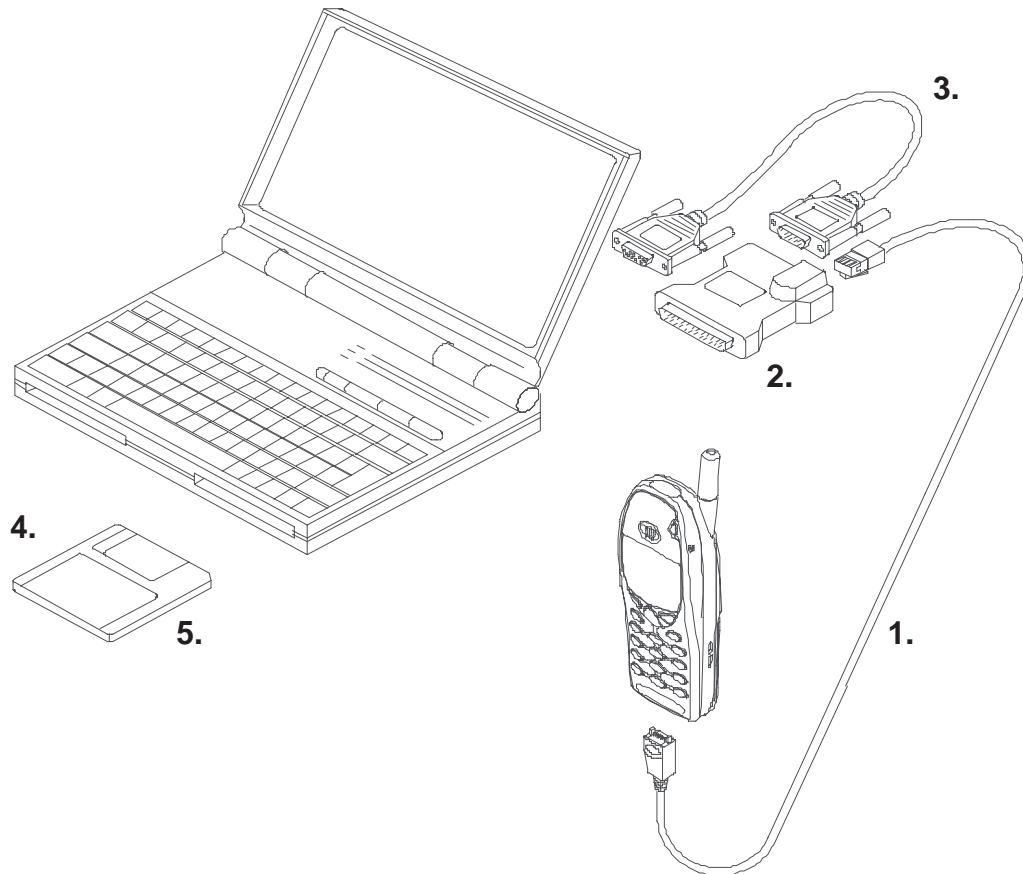
Reporting Status

The status bar 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.

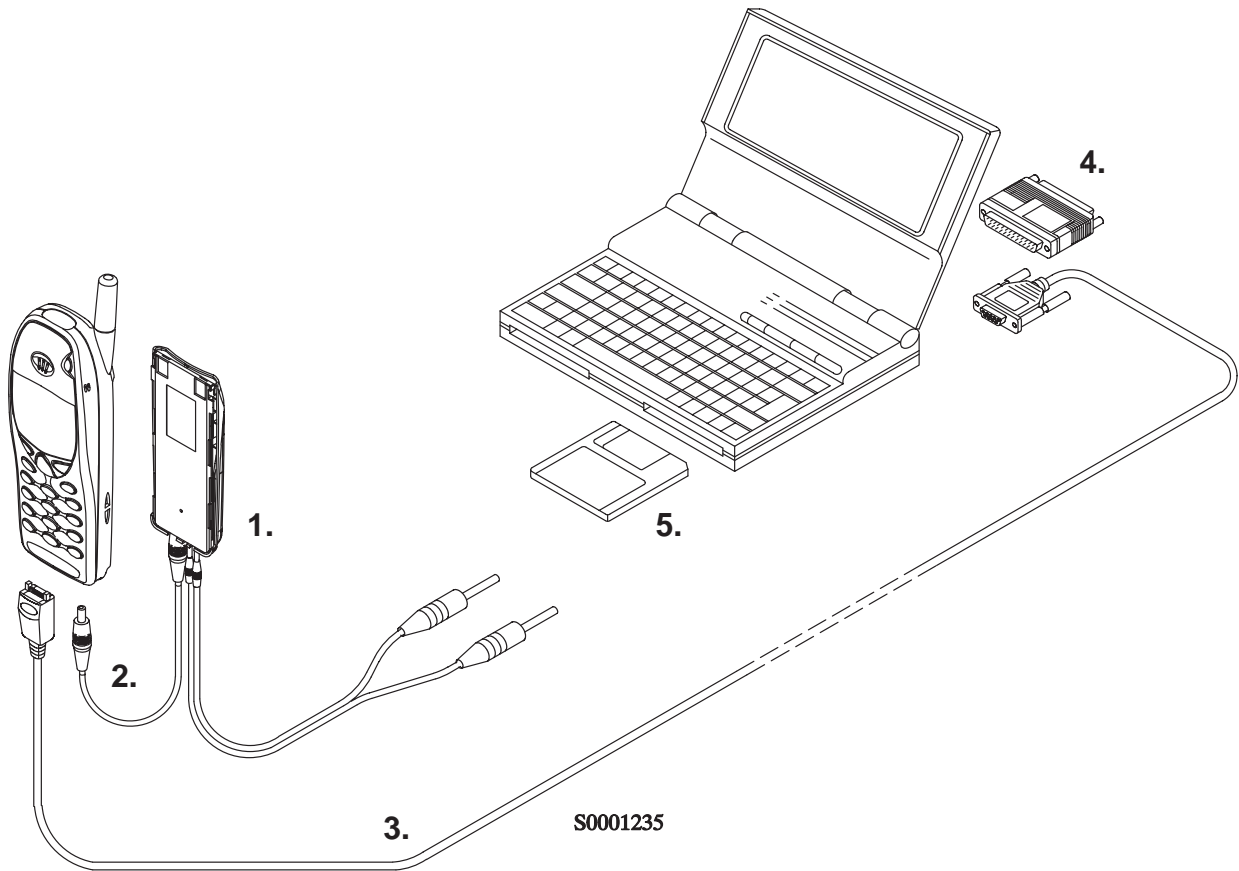
Service Setups

Equipment Setup for POS (Point of Sale) Flashing



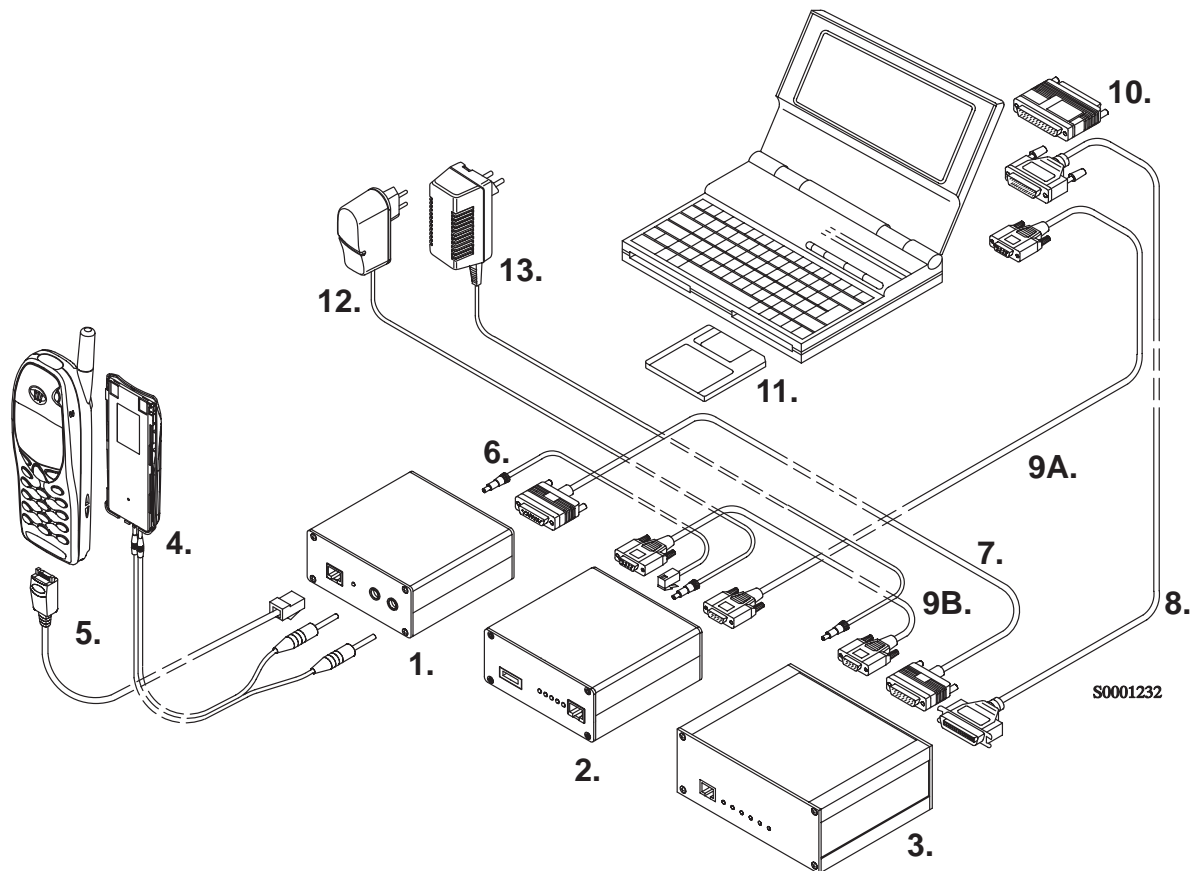
| Item: | Service accessory: | Product code: |
|---|--|--------------------|
| 1 | Service Cable SCH-5A NOTE: SCH-5 can also be used. | 0730166 |
| 2* | Dongle FLS-1 (dealer functions) | 0750130 |
| 3* | Serial Cable AXS-4U | 0730163 |
| 4* | WinTesla Software Dongle Driver 16 and 32 bit FLE-5 Driver 16 and 32 bit FLS-1 Remote update package | |
| 5 | Flash SW diskette 3.5" for NSD-3 WinTesla Service SW application | 0774107 0774046 |
| *NOTE: These are included in the POS Flash Sales Pack | | |
| | (US) | 0081289 |
| | (APAC) | 0081290 |
| | (Europe/Africa) | 0081291 |

Equipment Setup for Tuning a Phone without Removing Covers



| Item: | Service accessory: | Product code: |
|---|------------------------------------|---------------|
| 1 | Service Battery BBD-3 | 0775071 |
| NOTE: Operation time limited. Connect to a laboratory DC power supply (not to FLA-5). In testing BTD-3 Dymmy Test Battery 0670280 is recommended. | | |
| 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" for NSD-3 | 0774102 |
| | WinTesla Service SW application | 0774046 |

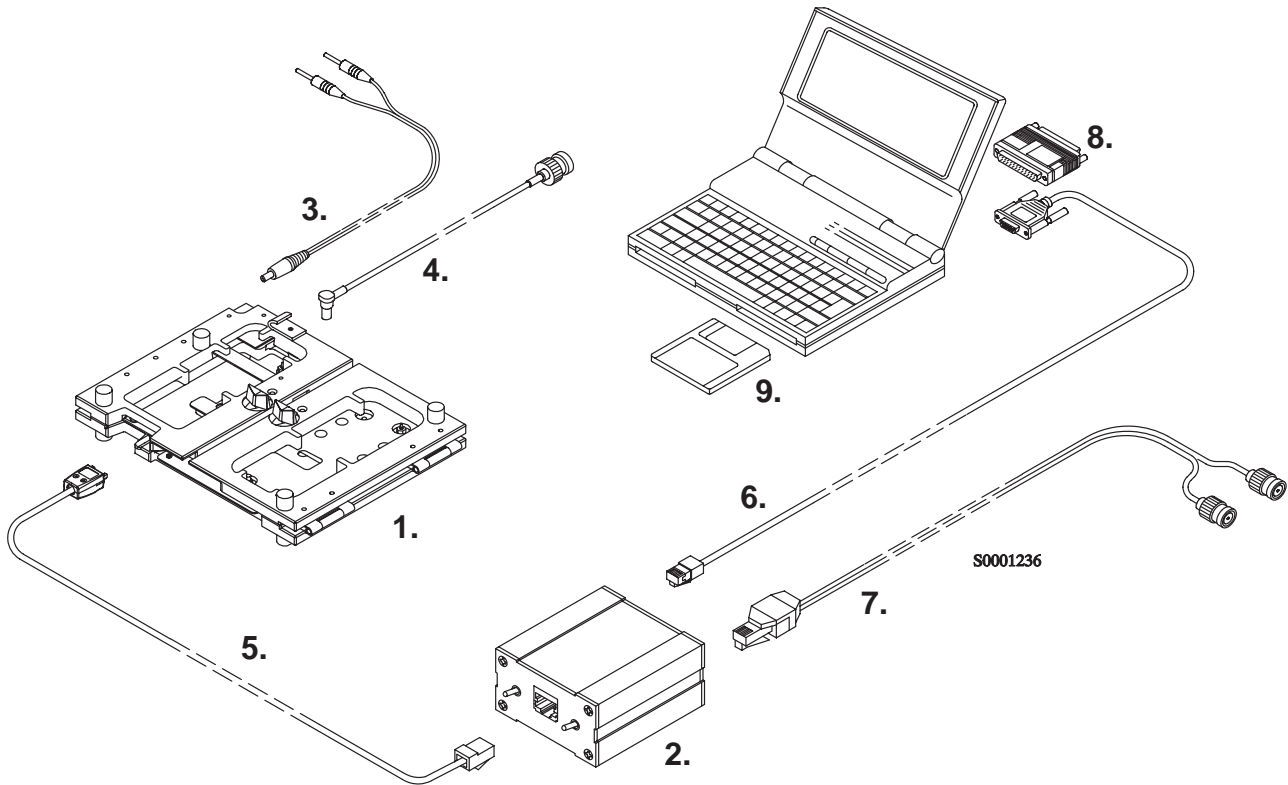
Flash Concept for NSD-3 (for Central Service use only)



| Item: | Service accessory: | Product code: |
|--------|--|---------------|
| 1 | Flash Loading Adapter FLA-5 | 0080178 |
| 2 | Flash Security Box TDF-4 | 0770106 |
| 3 | Prommer FPS-4S (see memory requirements in NOTE 1) | 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 | 0730091 |
| | (Included in FLA-5 sales pack) | |
| 8 | Printer Cable (Included in FPS-4 sales pack) | 0730029 |
| 9A | D9 - D9 Cable AXS-4 | 0730090 |
| | (Included in FPS-4 sales pack) | |
| 9B | D9 - D9 Cable AXS-4 | 0730090 |
| 10 | Software protection key PKD-1 | 0750018 |
| 11 | Service SW diskette 3.5" for NSD-3 | 0774102 |
| | WinTesla Service SW application | 0774046 |
| 12,13 | Travel Charger ACH-6E (Euro) | 0270381 |
| | Travel Charger ACH-6U (USA/Japan) | 0270382 |
| | Travel Charger ACH-6X (UK) | 0270380 |
| NOTE1: | 2 MB Flash module for FPS-4S | 0200743 |
| | 1 MB SRAM module for FPS-4S | 0200742 |

The FPS-4 must be equipped with 2MB memory. All units manufactured after wk22/98 have expanded S-RAM.

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



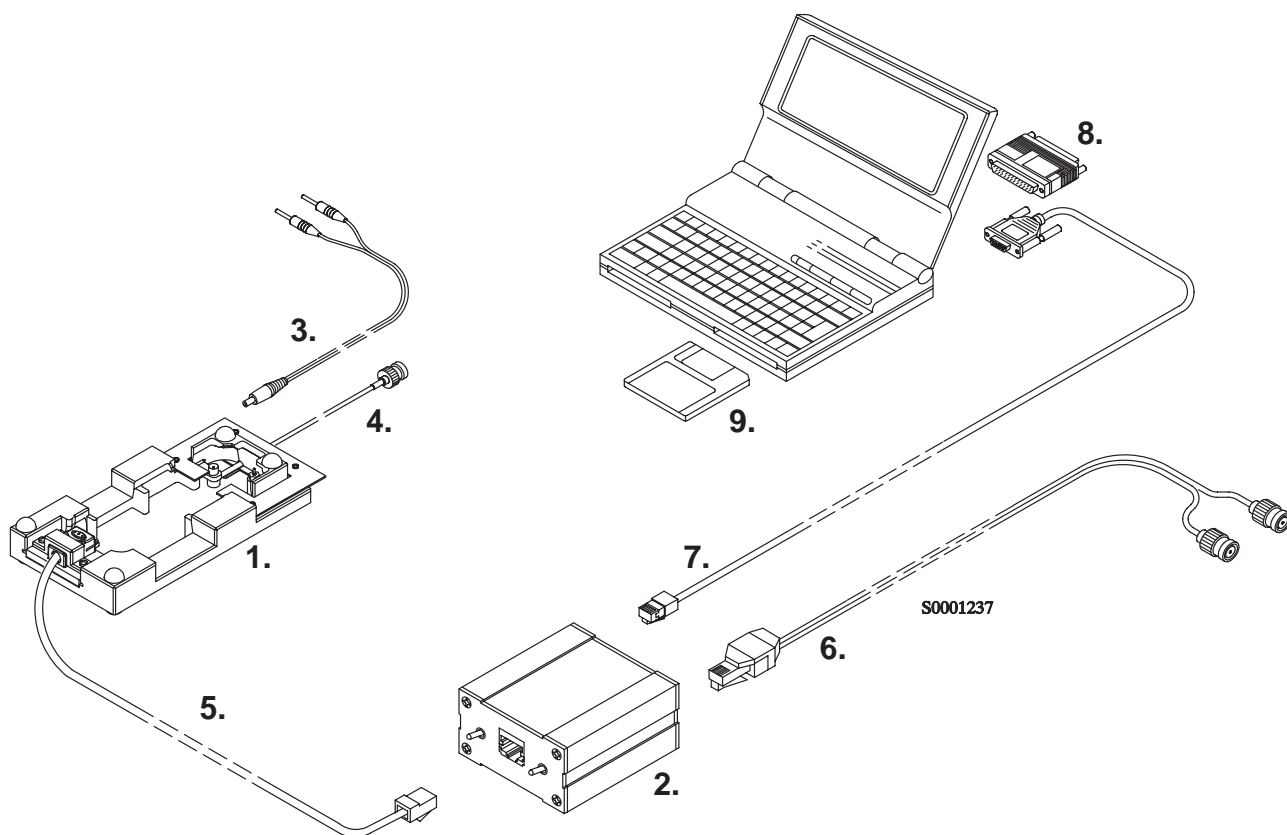
| Item: | Service accessory: | Product code: |
|-------|------------------------------------|---------------|
| 1 | Module Jig JBS-19 * | 0770098 |
| 2 | Service Audio Box JBA-4 ** | 0770094 |
| 3 | DC Cable PCS-1 | 0730012 |
| 4 | External Antenna Cable XRC-1B | 0730128 |
| 5 | Service Cable SCH-5 ** | 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" for NSD-3 | 0774102 |
| | WinTesla Service SW application | 0774046 |

NOTE: JBA-4: Set the MODE switch to TEST position (left) and AUDIO LOOP switch to OFF position (right).

*) 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



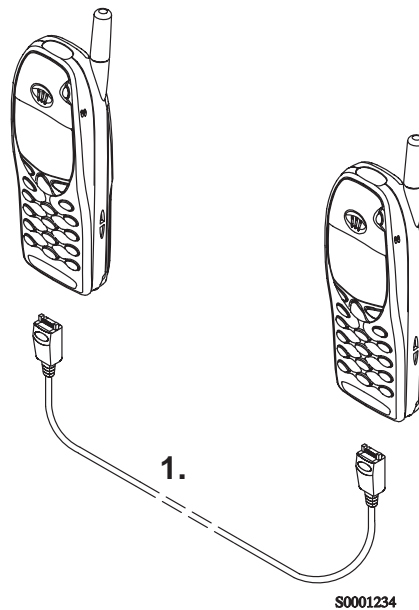
| Item: | Service accessory: | Product code: |
|-------|------------------------------------|---------------|
| 1 | Light Module Jig JBT-1 * | 0770109 |
| 2 | Service Audio Box JBA-4 ** | 0770094 |
| 3 | DC Cable PCS-1 | 0730012 |
| 4 | External Antenna Cable XRC-1B | 0730128 |
| 5 | Service Cable SCH-5 ** | 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" for NSD-3 | 0774046 |
| | WinTesla Service SW application | 0774046 |

NOTE: JBA-4: Set the MODE switch to TEST position (left) and AUDIO LOOP switch to OFF position (right).

*) 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

The Warranty cable SCH-6 is used to connect two phones and transfer the warranty data (user settings and serial numbers) from one phone to another.

The warranty transfer procedure is as follows

- After the transfer check with WinTesla the original and warranty ESN of the phone 2.
- Send the broken phone no.1 to the central service.

Central of Service

- Check and repair the phone .
- Change Warranty State from "defective" to "exchange".
- –Win Tesla and PKD-1CS are needed
- –Menu Software → Warranty Info → Info State → select "Exchange"
- Send the repaired phone to the dealer.

Point of Sale

- Use the returned phone as a swap phone.
- When the Warranty Info is transferred into a swap phone the Warranty State changes to USE mode.
- Send the broken phone to the central service.

Appendix 1, Vocabulary

| Abbreviation | Description |
|---------------|--|
| ADC | Analog to Digital Converter |
| AFC | Automatic Frequency Control |
| AGC | Automatic Gain Control |
| ASIC | Custom circuit which for instance controls communication between MCU and DSP (Application-Specific Integrated Circuit) |
| BBD-3 | Service Battery |
| CLF | Common Look and Feel |
| CLI | Calling Line Identification |
| COBBA | Common Base Band Analog |
| DAC | Digital to Analog Converter |
| 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) |
| ESN | Electrical Serial Number |
| FBUS | Fast serial bus |
| GPIB | General Purpose Instrument Bus, also know as HPIB. Specified by IEEE 488.2. |
| 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 registers | MCU DSP Interface; message interface via ASIC registers |
| ME | Mobile Equipment |
| MIN | Mobile Identification Number – The 34-bit number that is a digital representation of the 10-digit number assigned to a mobile station |
| MODAL | A modal dialog box requires the user to complete (dialog box) interaction within a dialog box, and close it before continuing with any further interaction outside the window. |

| | |
|--------------------|---|
| MODELESS | A modeless dialog box allows the user to interact (dialog box) with other windows and applications. |
| MS | Mobile Station |
| NAM | Number Assignment Module – A set of MIN/IMSI-related parameters stored in the mobile station |
| NID | Network Identification – A number uniquely identifying a network within a cellular system |
| 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. |
| PRL | Preferred Roaming List – A list of system identification numbers that identify systems that provide service to the mobile station at discounted roaming charges |
| RF | Radio Frequency |
| RSSI | Received Signal Strength Indication |
| RTC | Real Time Clock |
| SID | System Identification – A number uniquely identifying a network within a cellular system |
| SW | Software |
| TDF-4 | Flash security box |
| Tesla application. | Acronym – stands for TE st and S ervice L ocals A p- p lication. |
| UI | User Interface |
| WinTesla | This Service Software program. Name copyright © Nokia Mobile Phones (1996). |

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