Nokia Customer Care
RH-53/54

4-Service Software Instructions

ISSUE 1 09/2004

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Quick Guide for Phoenix Service SW Installation

Phoenix Installation Steps in Brief

These are the basic steps to install the Phoenix

-Connect a PKD Dongle or FLS-4S POS Flash Device

-Install the Phoenix Service SW

-Install the Data Package for Phoenix

-Configure users

-Manage connection settings (depends on the tools you are using)

-Phoenix is now ready for FLS-4S Point Of Sales Flash Device use.

-If you use FPS-8:

--Update FPS-8 SW

--Activate FPS-8

--Update JBV-1 Docking Station SW (only when needed)

Phoenix is now ready to be used also with FPS-8 flash prommer and other tools

The Phoenix Service Software installation contains:

-Service software support for all phone models included in the package

-Flash update package files for FPS-8* and FLS-4S programming devices

-All needed drivers for:

-- DK2 dongle

-- FLS-4S point of sales flash device

-- USB devices

Separate installation packages for flash update files and drivers are also available, but it is not necessary to use them unless updates appear between Phoenix Service SW releases. If separate update packages are used, they should be used after Phoenix and data packages have been installed.

The phone model specific data package includes all changing product specific data:

Product software Binary files

Files for type label printing

Validation file for the Faultlog repair data reporting system

All product specific configuration files for Phoenix software components

Please refer to Service Manual and Technical Bulletins for more information concerning phone model specific service tools and equipment setup.

Phoenix Service SW

Before Installation

- Check that a Dongle is attached to the parallel port of your computer .
- Download the installation package (eg ***phoenix_service_sw_a10_2003_33_5_22.exe***) to your computer (eg C:\TEMP)
- Close all other programs
- Run the application file (eg ***phoenix_service_sw_a10_2003_33_5_22.exe***) and follow instructions on the screen
- Administrator rights may be required to be able to install Phoenix depending on the Operating System
- If uninstalling or rebooting is needed at any point, you will be prompted by the Install Shield program.

If at any point during installation you get this message, Dongle is not found and installation can´t continue.

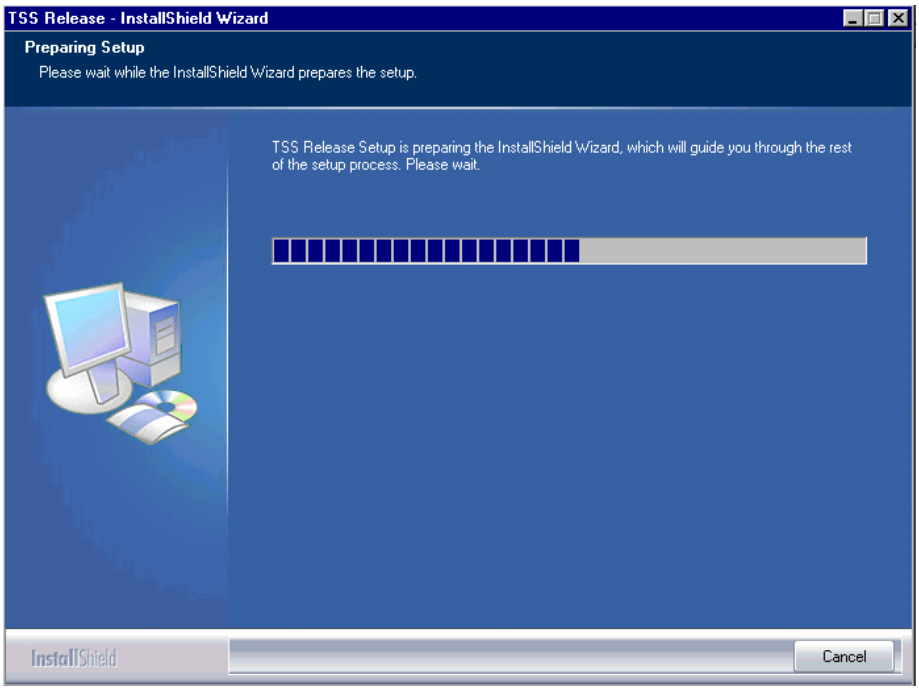
Possible reasons may be defective or too old PKD-1Dongle (five digit serial number Dongle when used with FPS-8 Prommer) or that the FLS-4S POS Flash Dongle is defective or power to it is not supplied by external charger.

Check the COM /parallel ports used first! After correcting the problem Installation can be re-started.

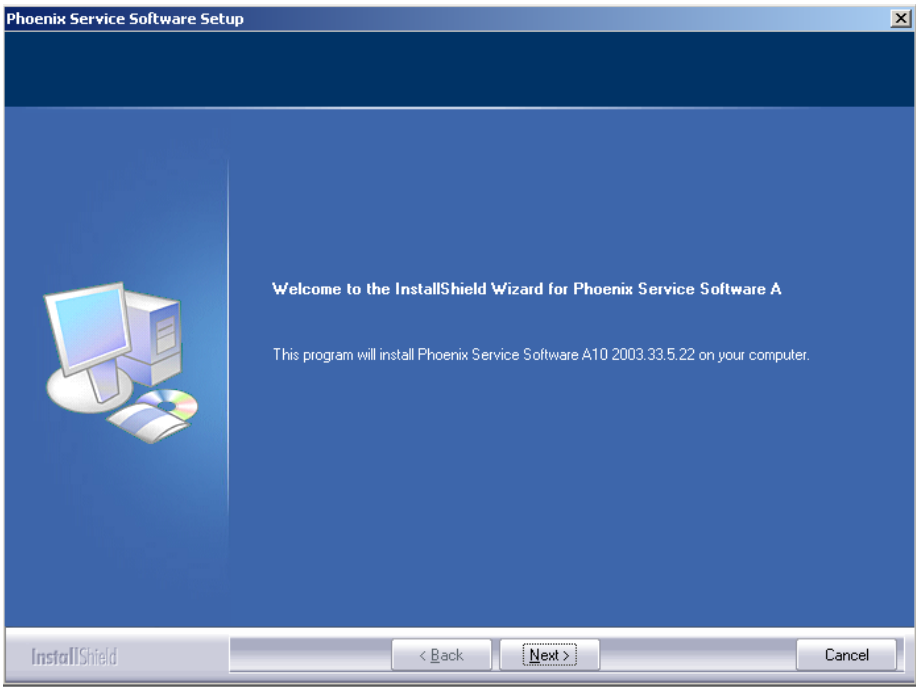
Startup

Run the *phoenix_service_sw_a10_2003_33_5_22.exe* to start installation .Install Shield will prepare.

.

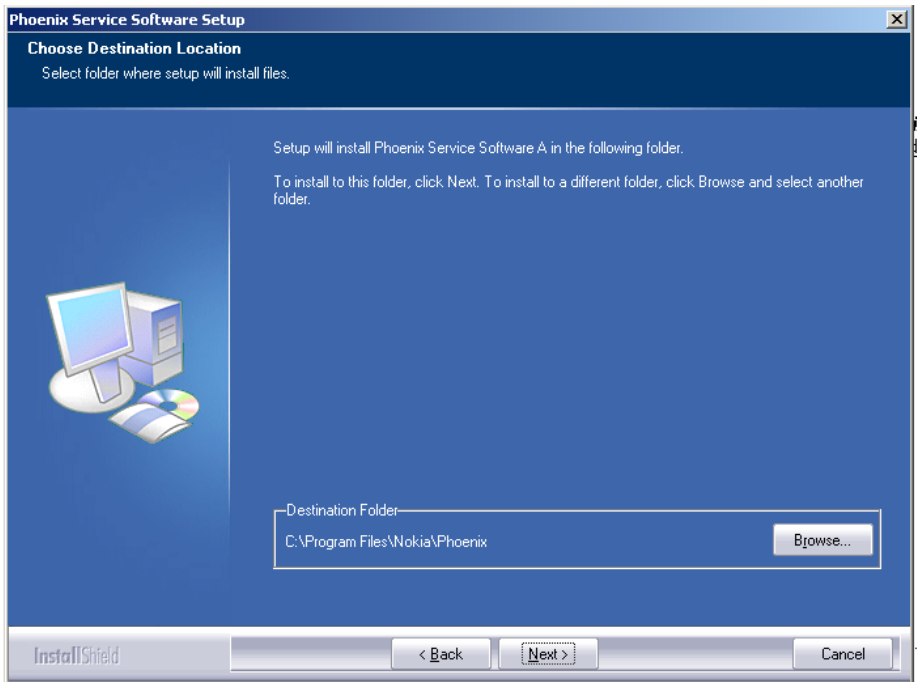


Click "Next" in Welcome dialog to continue.

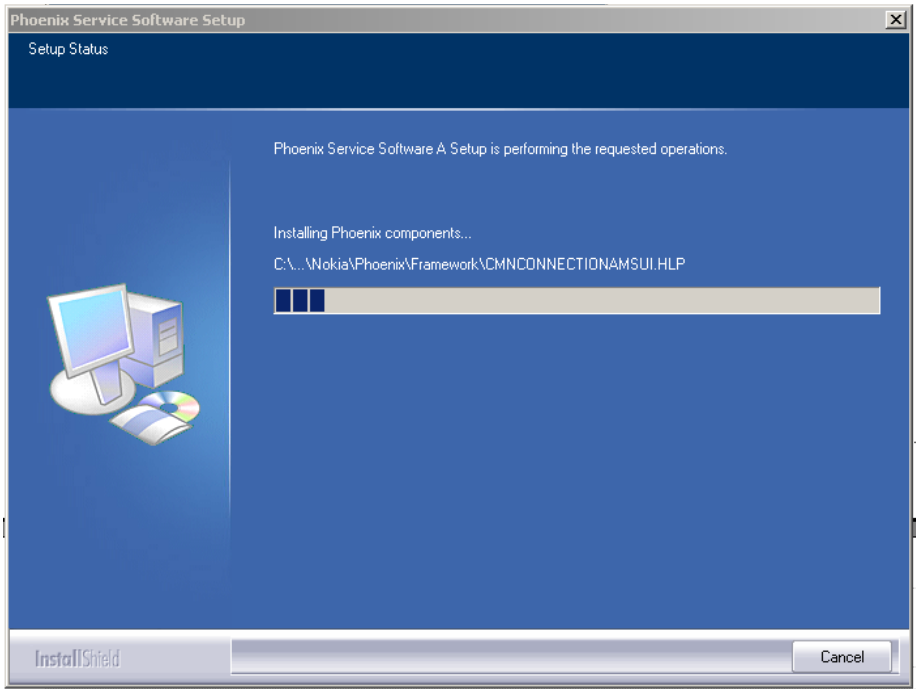


Choose destination folder, it is recommended to use the default folder *C:\ProgramFiles\Nokia\Phoenix*.

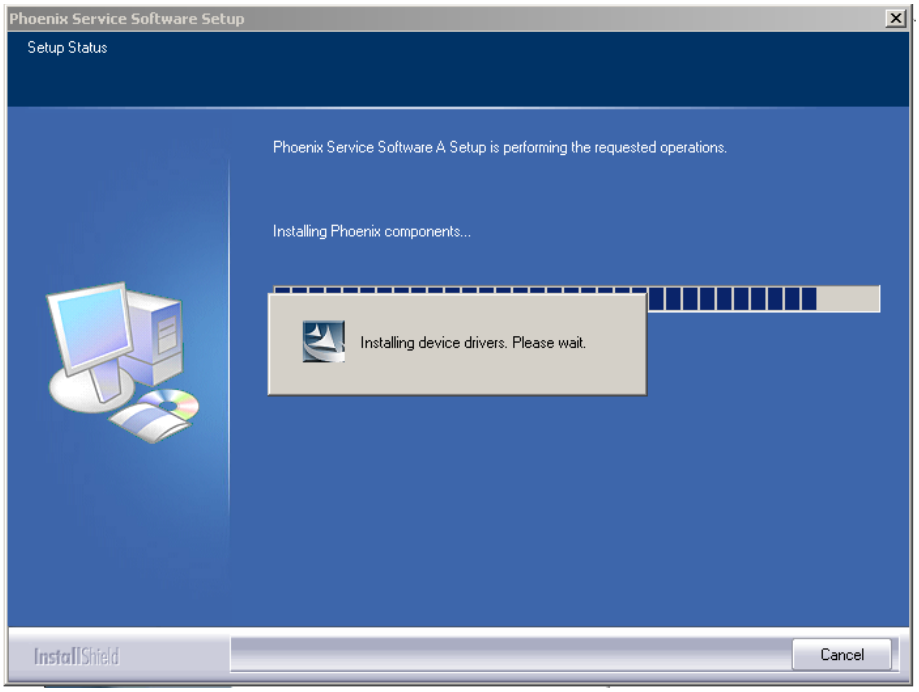
Choose “Next” to continue. You may choose another location by selecting “Browse” (not recommended)



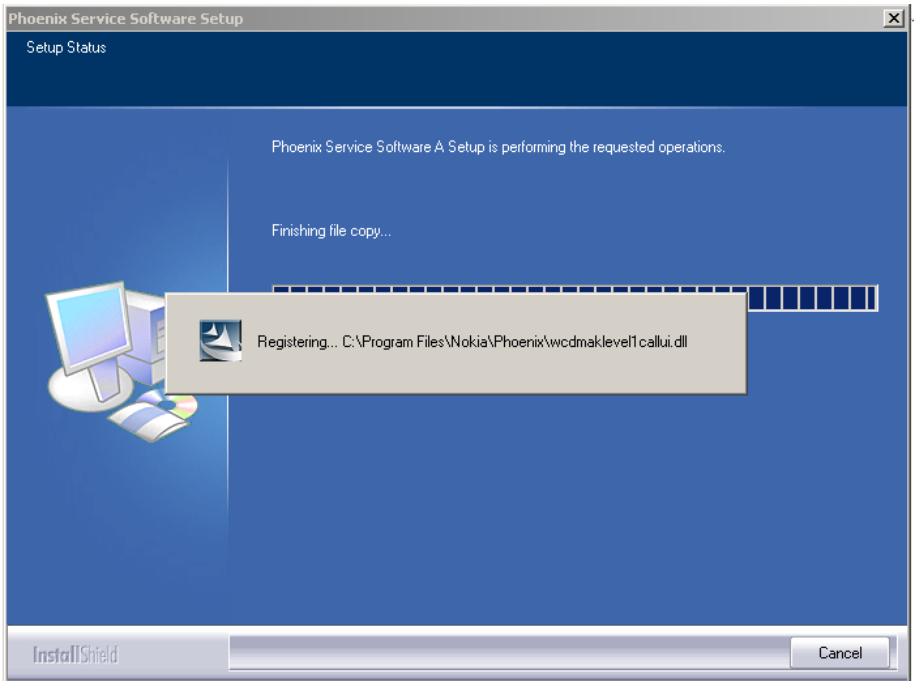
Setup copies the components, progress of the setup is shown. Please wait…



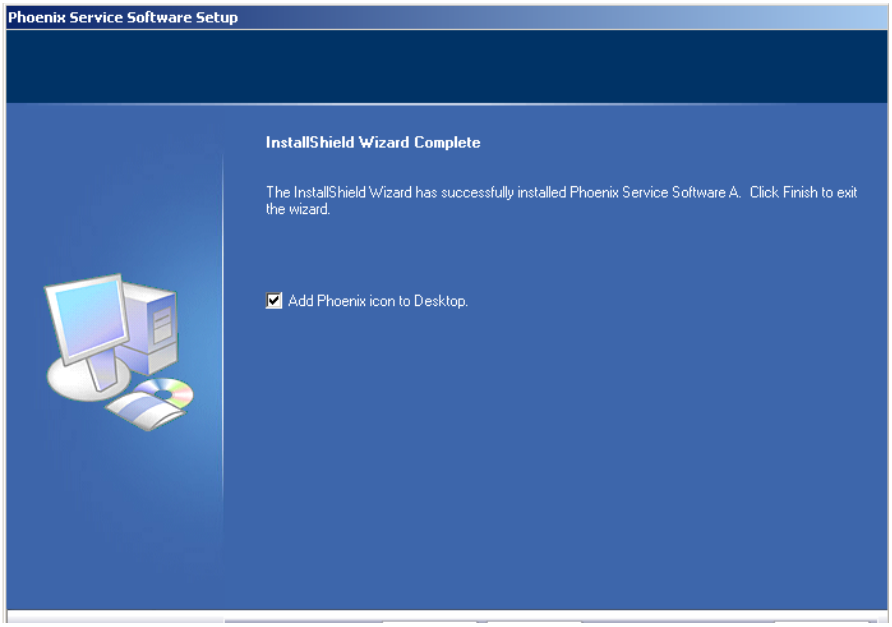
Drivers will be installed and updated, please wait.. the process may take several minutes to complete.



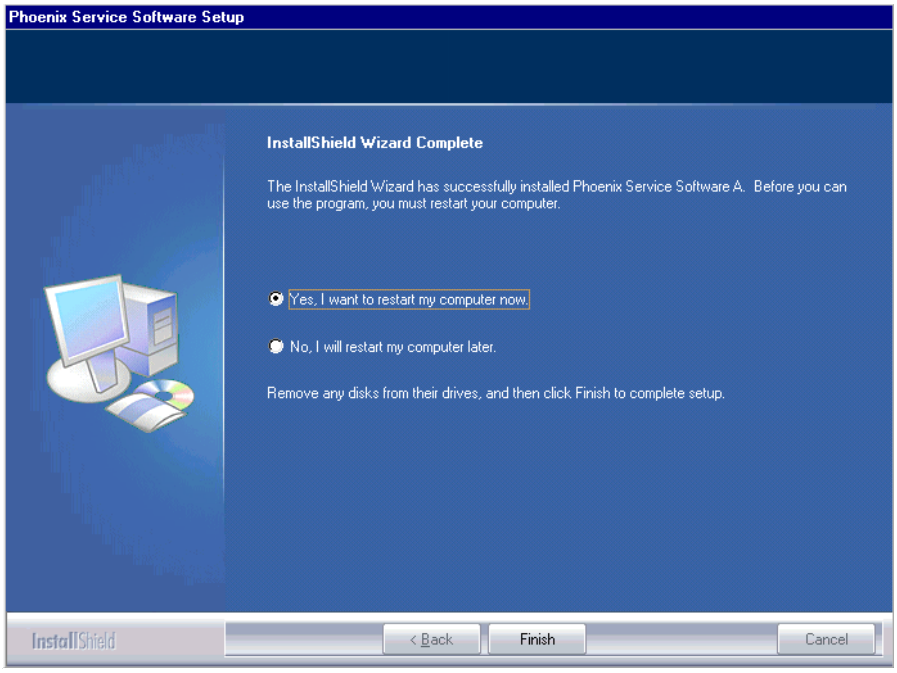
If the operating system does not require rebooting (Windows 2000, XP) the PC components are registered right away.



Click "Finish" to finalize. Phoenix is ready for use.



If the operating system used requires restarting your computer (Windows 98, SE, ME) the Install Shield Wizard will tell you about it. Select "Yes..." to reboot the PC immediatelly and "No..." to reboot the PC manually afterwards.



After the reboot components are registered and Phoenix is ready for use. Note that Phoenix doesn't work, if components are not registered.

Now the installation of Phoenix Service SW is ready and it can be used after :

Installing Phone model specific Phone Data Package for Phoenix

Configuring users and connections

FLS-4S can be used right away

FPS-8* can be used after updating Flash Update Package files to it

If reboot is not needed components are registered after copying them.

If restarting of your computer is not needed, Click "Finish" to exit the setup.

Phoenix is now ready for use.

Now the installation of Phoenix Service SW is ready and it can be used after:

- Installing Phone model specific Phone Data Package for Phoenix
- Configuring the connections
- Updating the Flash Update Package files used with FPS-8* and FLS-4S* tools

Update Installation of Phoenix

If you already have the Phoenix Service SW installed on your computer, sooner or later there will be need to update it when new versions are released.

Always use the latest available versions of both the Phoenix Service SW and the Phone Specific Data Package . Instructions can be found in phone model specific Technical Bulletins and Phone Datapackage readme.txt files (shown during installation).

To update the Phoenix you need to take exactly the same steps as when installing it for the first time.

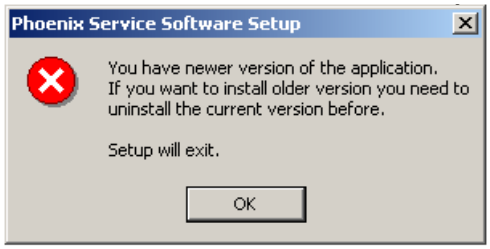
- Download the installation package to your computer hard disk
- Close all other programs
- Run the application file (e.g. ***phoenix_service_sw_a10_2003_33_5_22.exe***)
- Newer version of Phoenix will be installed.
- Driver versions are checked and updated if necessary

When you update the Phoenix from old to new version (e.g. update from 2003_9_2_3 to 2003_33_5_22), the update will take place automatically without uninstallation

f you try to update the Phoenix with the same version that you already have (e.g. *a10_2003_33_5_22* to *a10_2003_33_5_22*) you are asked if you want to unistall the version of Phoenix you have on your PC.

In this case you can choose between total uninstallation and repair just like whan you choose to uninstall Phoenix service software from the Windows control panel.

If you try to install an older version (e.g. downgrade from *a11_2003_41_1_24* to *a10_2003_33_5_22* installation will be interrupted.



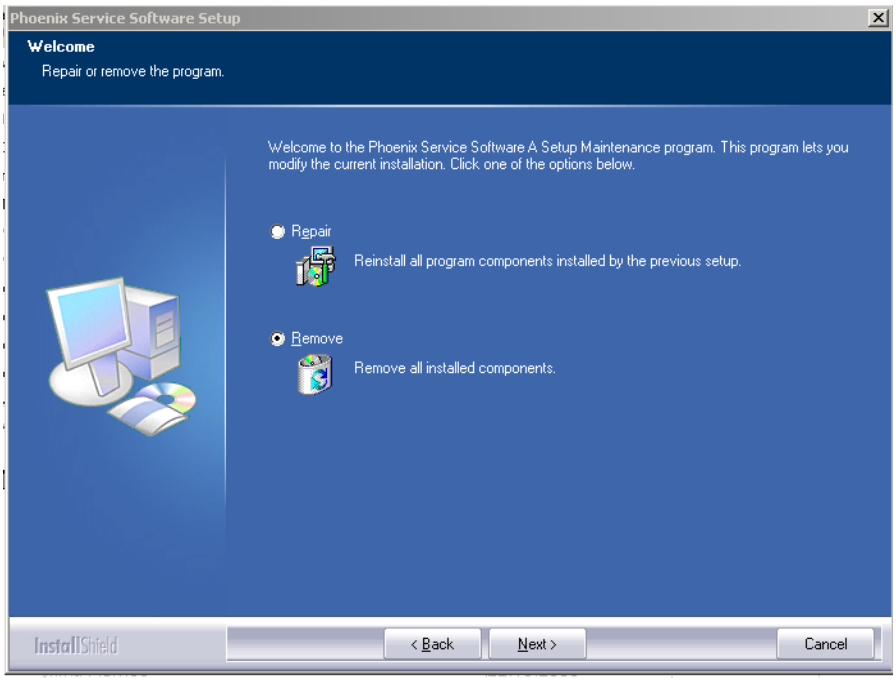
Always follow the instructions on the screen.

How to Uninstall Phoenix

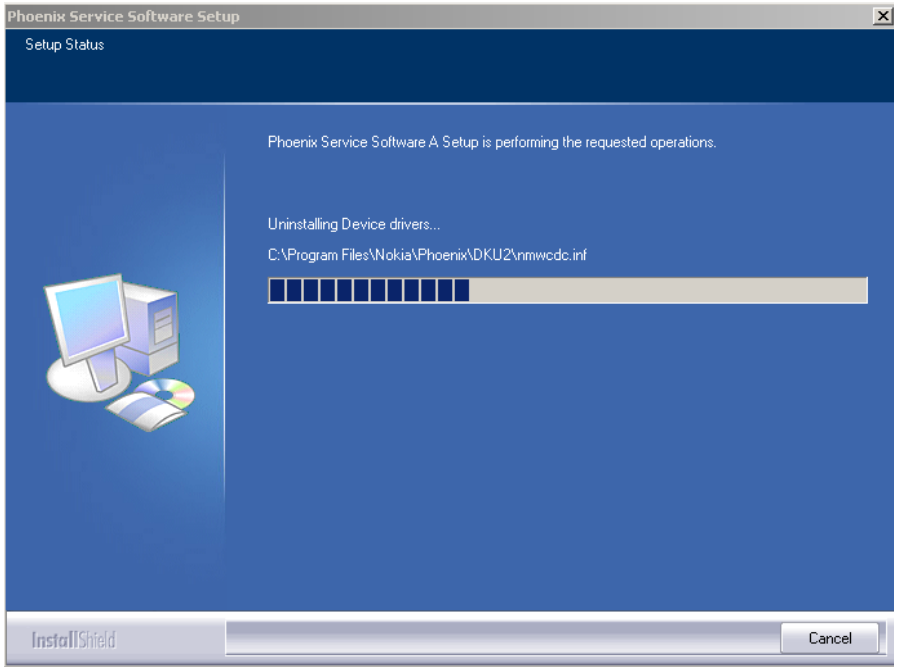
Uninstallation can be done manually from Windows Control Panel - Add / Remove Programs.

Choose “Phoenix Service Software” and click "Add/Remove".

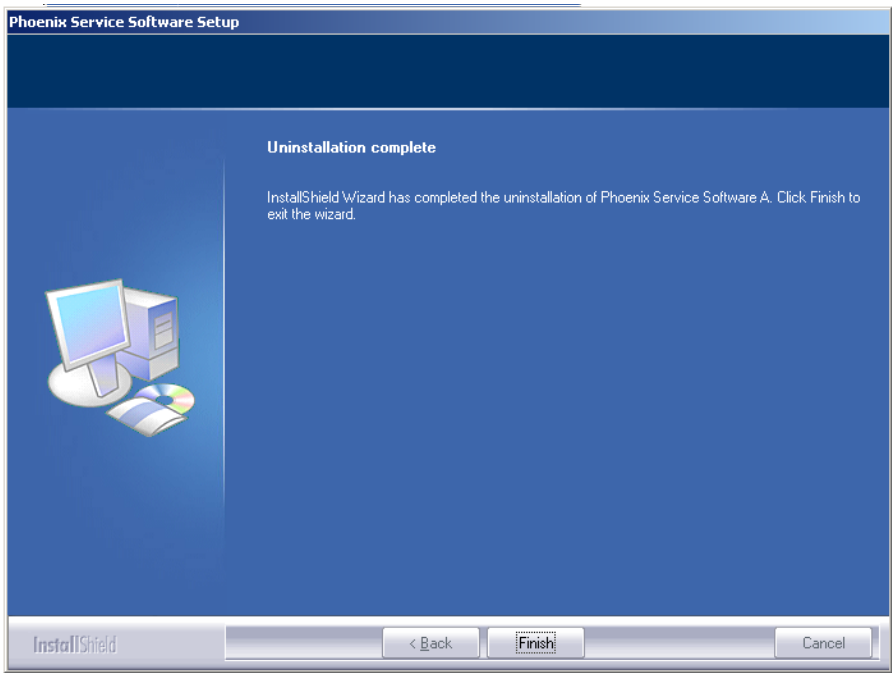
Choose “Remove” to uninstall



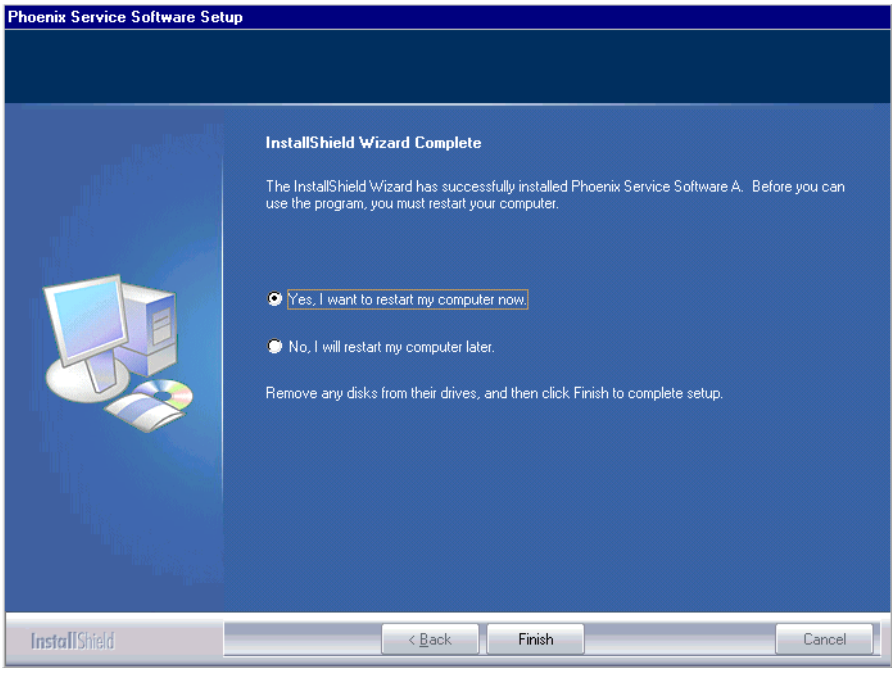
Progress of the uninstallation is shown.



If the operating system does not require rebooting, select “Finish” to complete.



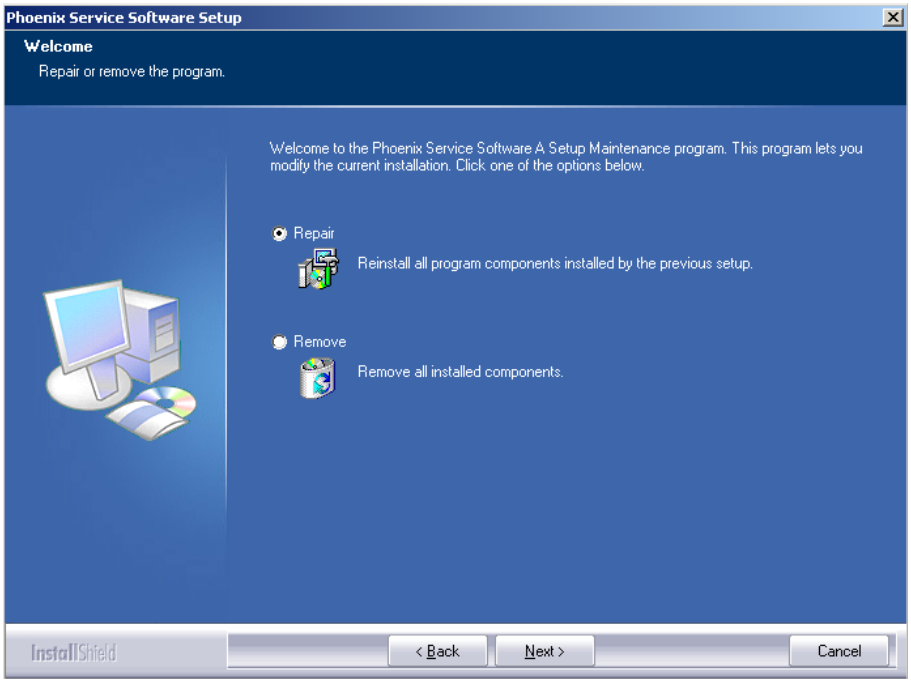
If the operating system used requires rebooting, Install Shield Wizard will tell you about it. Select "Yes..." to reboot the PC immediatelly and "No..." to reboot the PC manually afterwards.



Repair

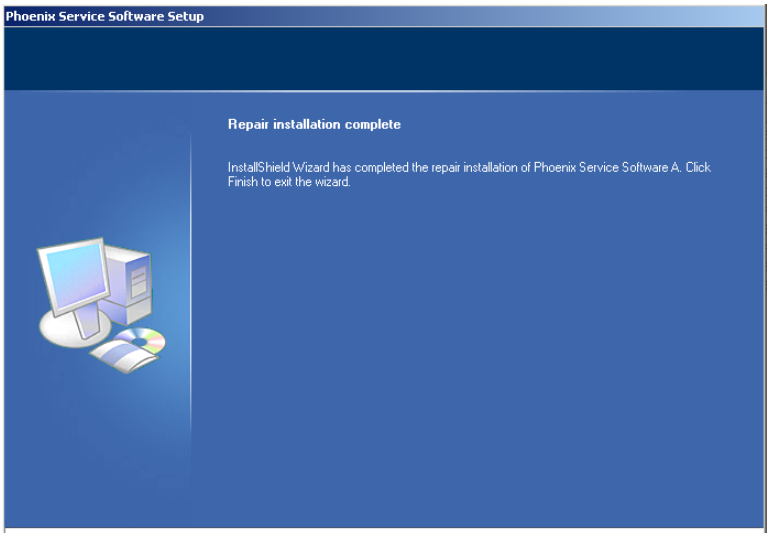
If you experience any problems with service software or suspect that files have been lost, you can use the repair – function before completely reinstalling Phoenix. Note that the original installation package (e.g. *phoenix_service_sw_a10_2003_33_5_22.exe)* must be found on your PC when you run the repair setup.

Run Windows Control Panel - Add / Remove Programs, choose “Phoenix Service Software” and click "Add/Remove". In the following view choose “Repair”.



Phoenix will reinstall components and register them, procedure is the same as in update installation.

Choose “Finish” to complete.



Data Package for Phoenix (Product Specific)

Before installation

Product Data Package contains all product specific data to make the Phoenix Service Software and tools usable with a certain phone model.

It also includes the latest version of flash update package for FLS-4S* and FPS-8*

- Check that the Dongle is attached to the parallel port of your computer.
- Install Phoenix Service SW
- Download the installation package (eg ***RH-53/54_dp_v_XX_XX_MCUSWx_xx.exe***) to your computer (e.g. C:\TEMP)
- Close all other programs
- Run the application file (eg ***RH-53/54_dp_v_XX_XX_MCUSWx_xx.exe)***) and follow instructions on the screen

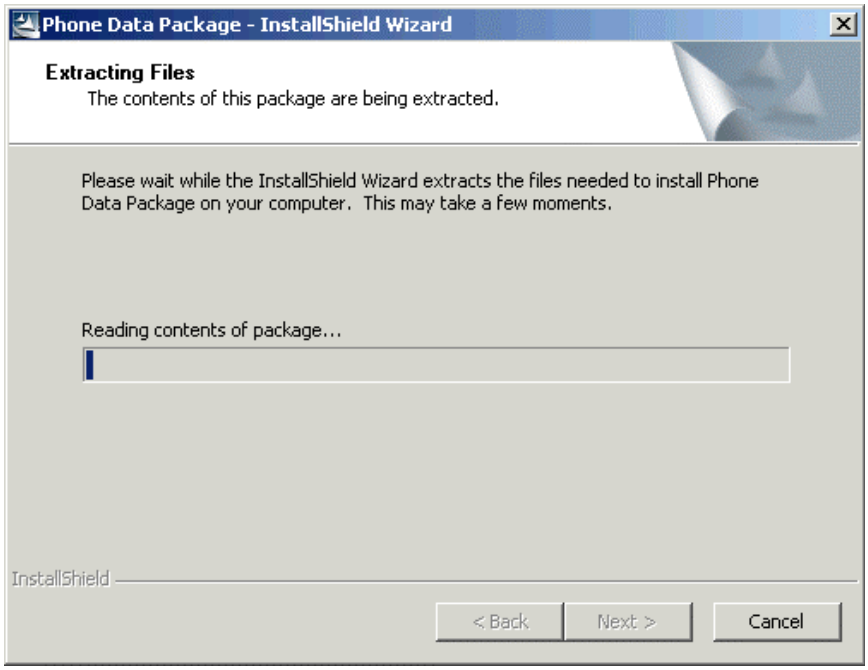
Please note that very often the Phoenix Service SW and the Phone Specific Data Package for Phoenix come in pairs, meaning that certain version of Phoenix can only be used with certain version of Data Package.

Always use the latest available versions of both. Instructions can be found in phone model specific Technical Bulletins and readme.txt – files of the data packages.

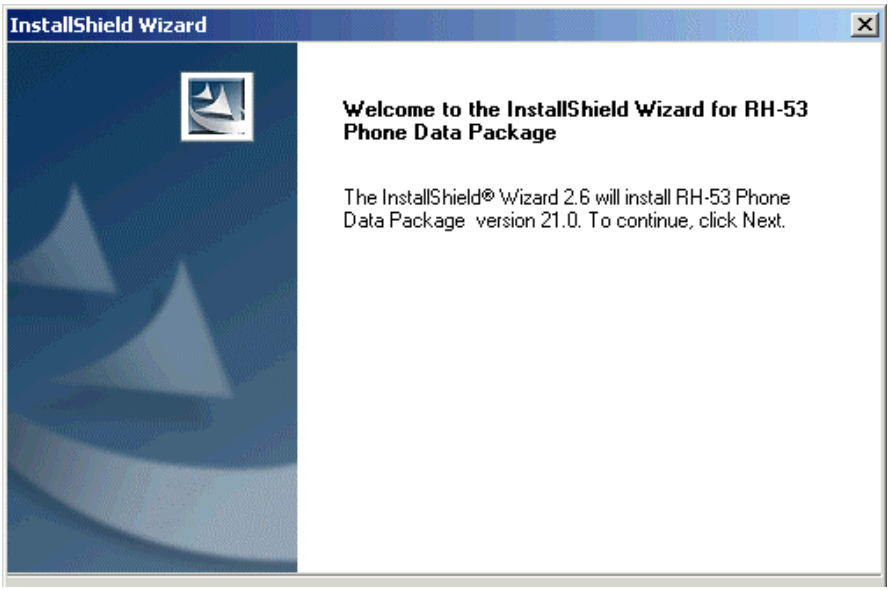
Installation of Phoenix Data Package (Product Specific)

Run the e.g. ***RH-53_dp_v_210_mcusw05.16.exe*** to start installation.

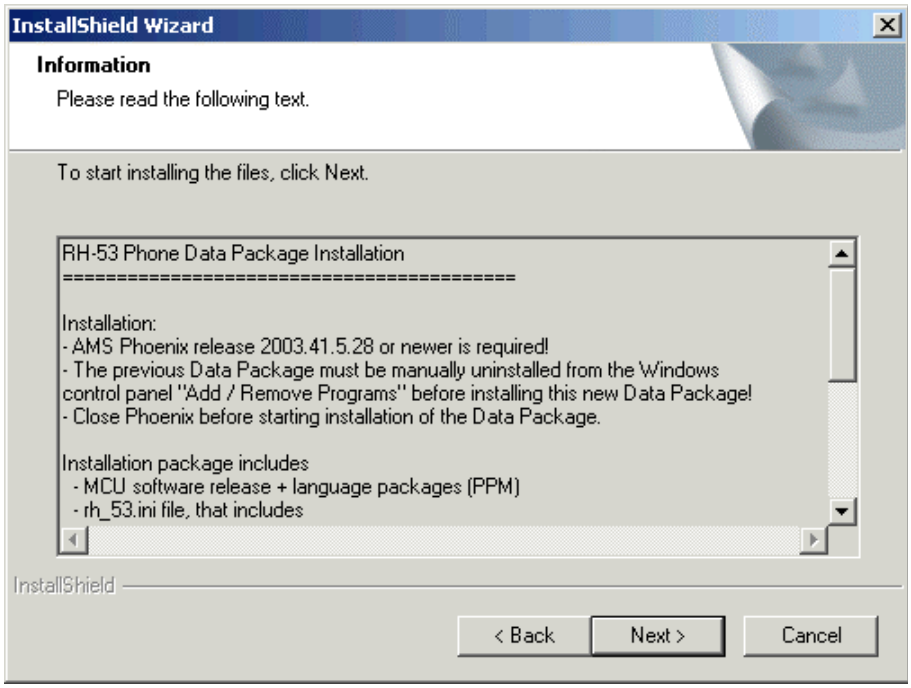
When you choose “Next” the files needed for installation will be extracted. Please wait…



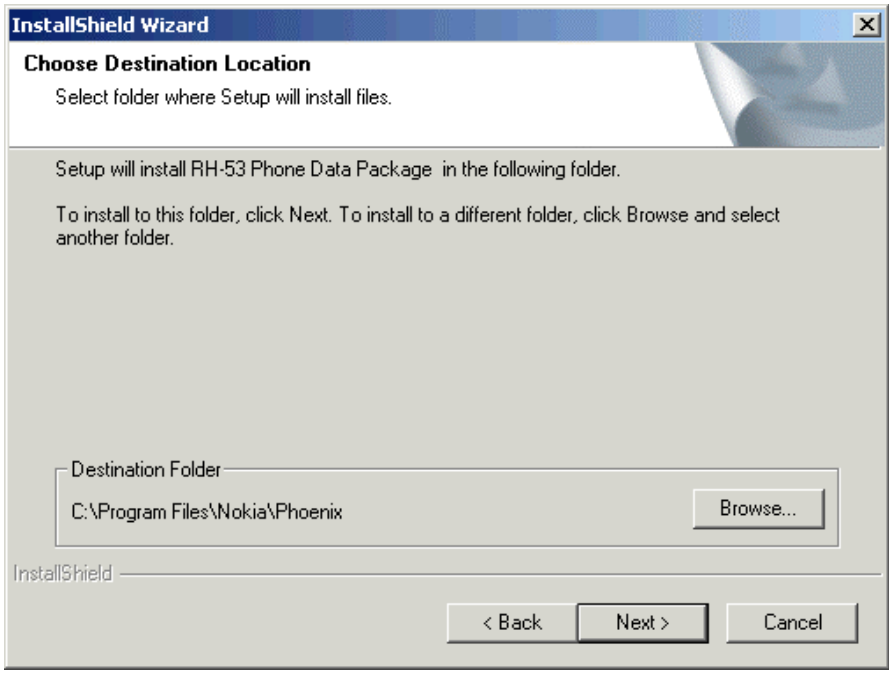
Choose “Next” to continue.



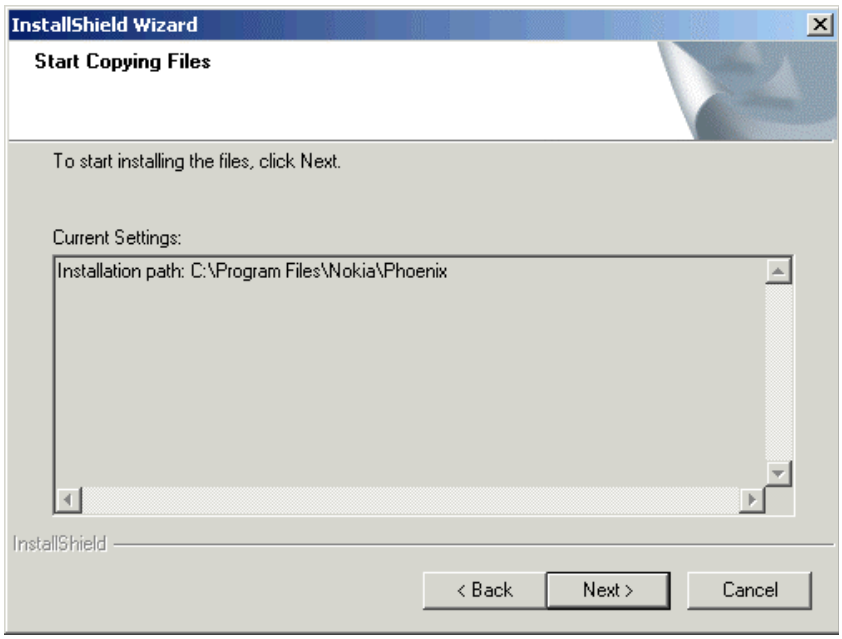
From this view you can see the contents of the Data Package. **Read the text carefully**. There should be information about the Phoenix version needed with this data package. Choose “Next”.



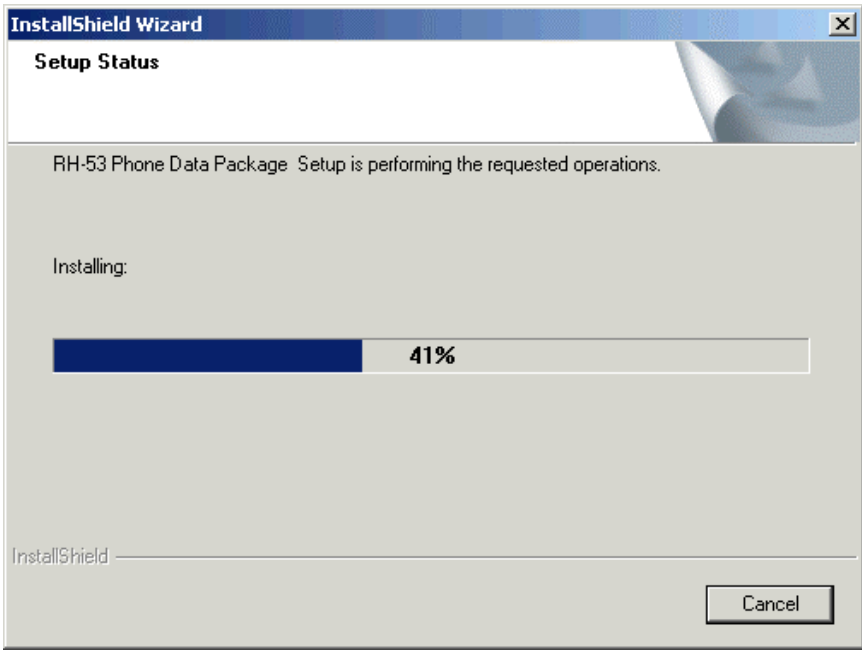
Confirm location and choose “Next” to continue. Install shield checks where the Phoenix application is installed and the directory is shown. Choose “Next” to continue.



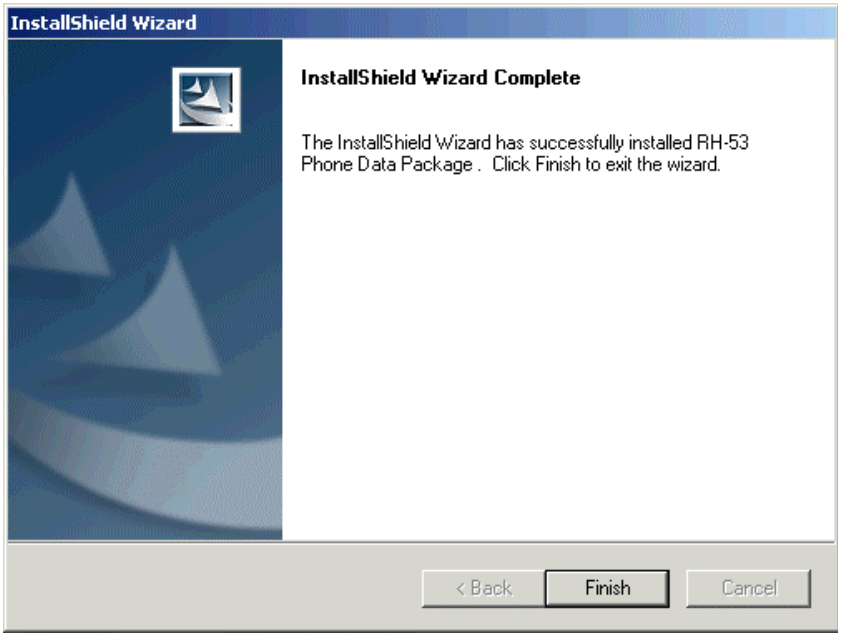
Choose “Next” to start copying the files.



Phone model specific files will be installed. Please wait



Choose “Finish” to complete installation



You now have all phone model specific files installed in your Phoenix Service SW.

Note, a seprate data package for RH-54 are needed

Now Phoenix can be used to for example flash phones and print type labels after:

Configuring users

Managing connections

FLS-4S can be used right away

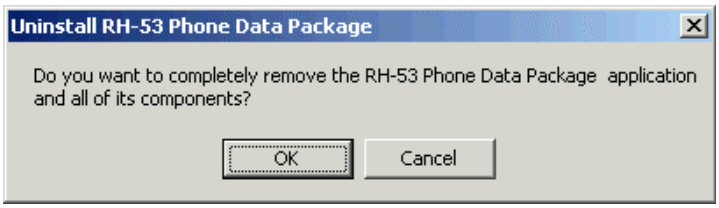
FPS-8* can be used after updating Flash Update Package files to it

How to Uninstall Data Package

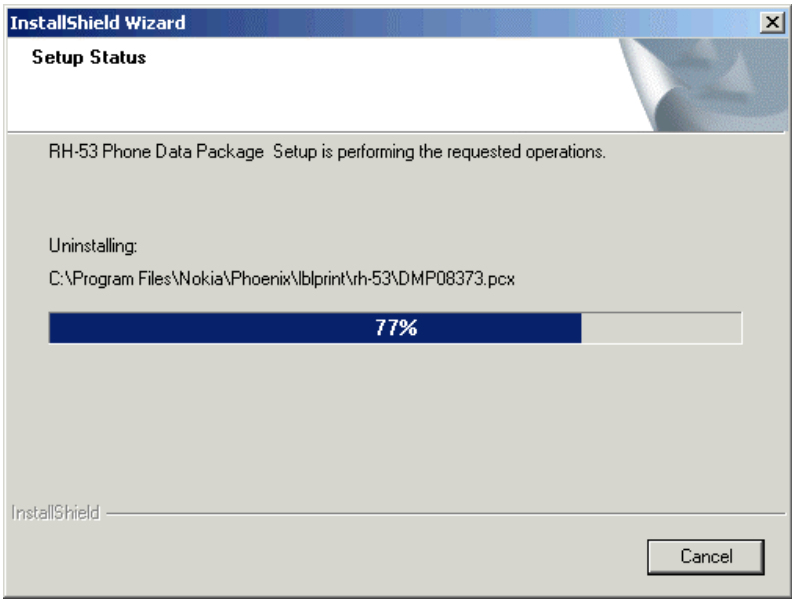
Uninstallation can also be done manually from Windows Control Panel / Add / Remove Programs/

RH-53 Phone Data Package".

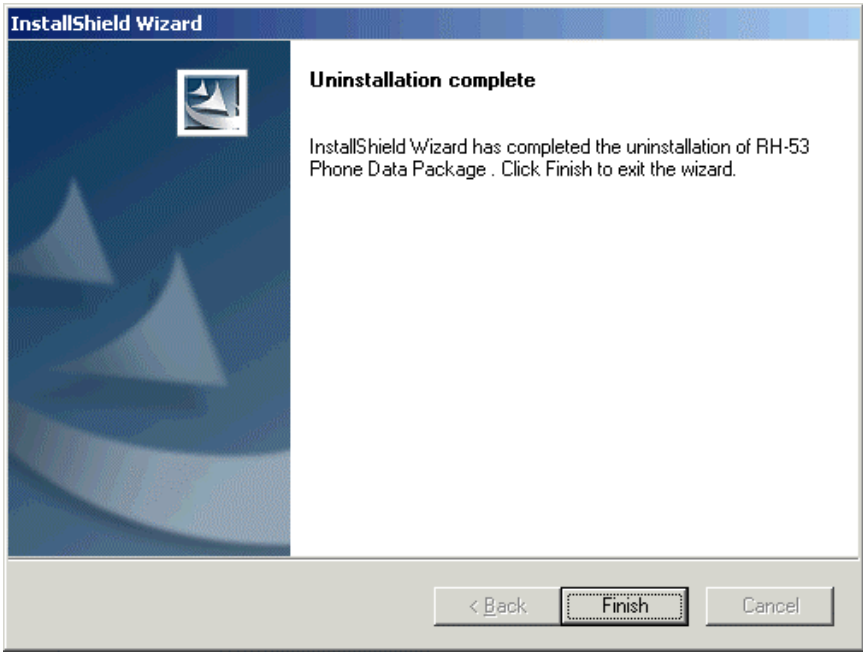
If you try to install the same version of Phoenix Data Package that you already have, you are asked if you want to unistall the version you have on your PC. Answer "OK" to uninstall, "Cancel" if you don't want to uninstall.



Older versions of data packages don´t need to be uninstalled unless instructions to do so are given in the readme.txt of the data package and bulletins concerning the release. Please read all related documents carefully.



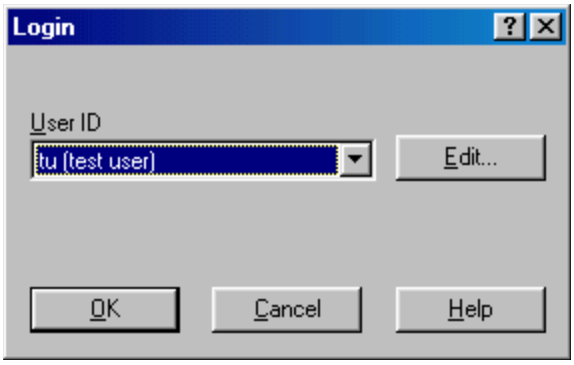
Once the previously installed Data package is uninstalled, choose “Finish”.



Run the ***RH-53_dp_v_21.0_mcusw05.16.exe*** again in case you want to continue installation from the beginning.

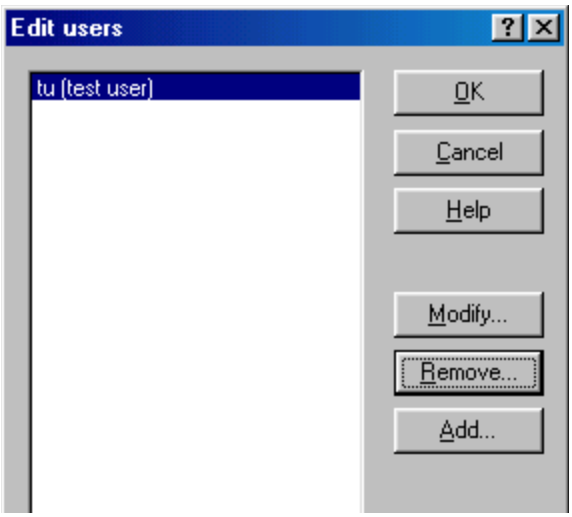
How to configure Users

Start Phoenix Service SW and Login. To add new user choose “Edit”. If user ID is already con-



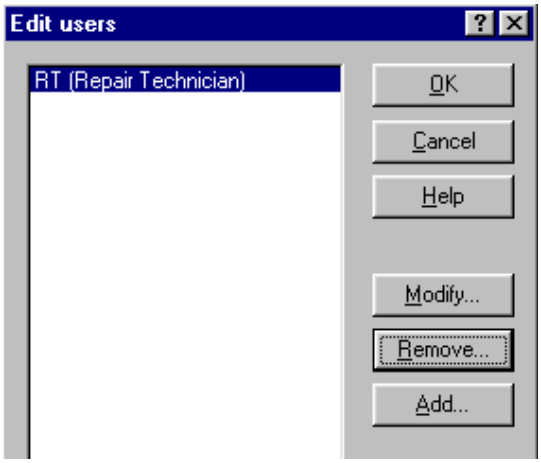
figured, choose your own user ID from the list and choose “OK”

Choose “Add ” to continue.



Type in your name and Initials to fields and choose “OK”

User has now been created, choose “OK”....

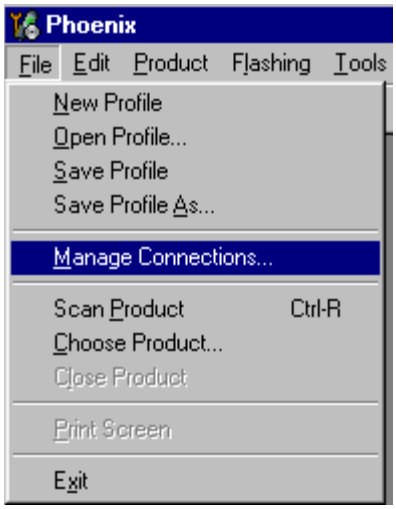


….you are now able to login with this username, choose “OK”

How to Manage Connections

Start Phoenix Service SW and Login.

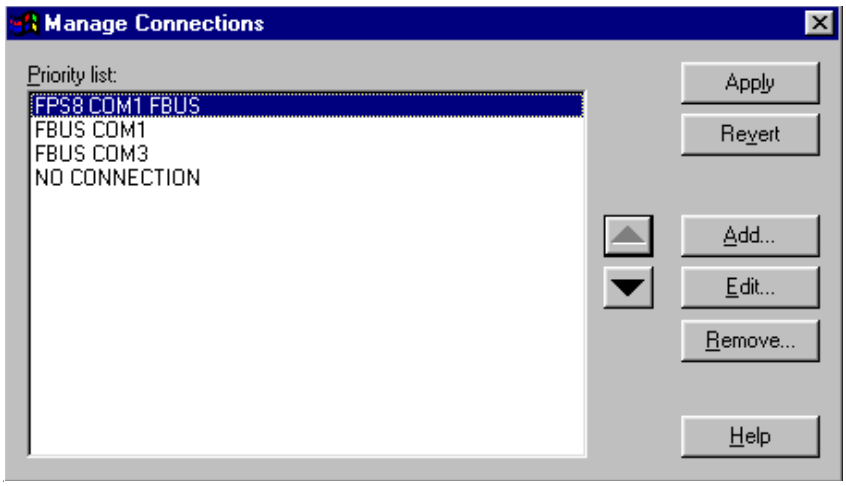
Choose “Manage Connections” From “File” – Menu



Existing connections can be selected , edited, deleted and new ones created by using this dialog.

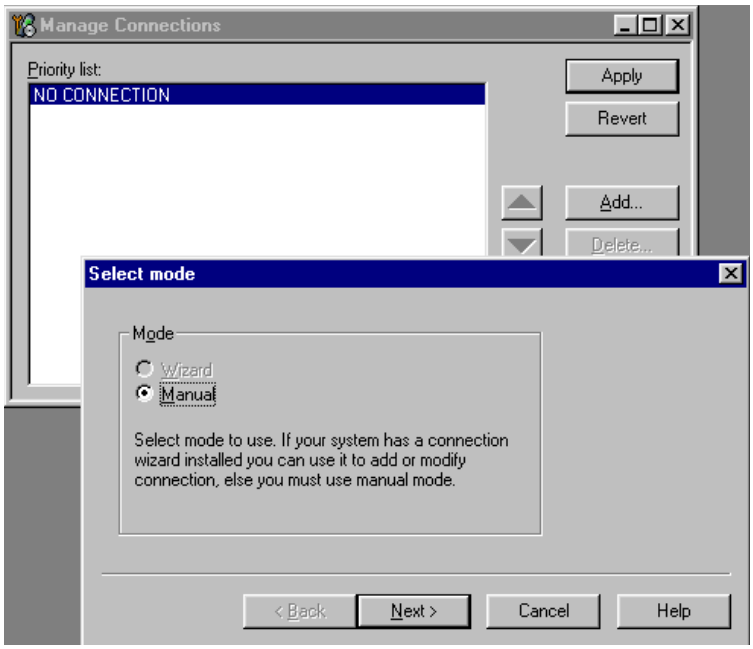
A connection can be created either manually or by using a Connection Wizard.

To add new connection, choose “Add” and select if you want to create it manually or by using the Wizard.



Choose “Next” to continue.

In the next dialogs you will be asked to select some settings for the connection.



Manual Settings

A) For FLS-4S POS Flash Device choose following connection settings:

Media: FBUS

COM Port: Virtual COM Port used by FLS-4S. **Please check this always!**

(To check please go to Windows / Control Panel / FLS Virtual Port / Configuration)

(To check please go to Windows / Control Panel / FLS Virtual Port / Configuration)

B) For FPS-8 Flash Prommer choose following connection settings:

Media: FPS-8

Port Num: COM Port where FPS-8 is connected

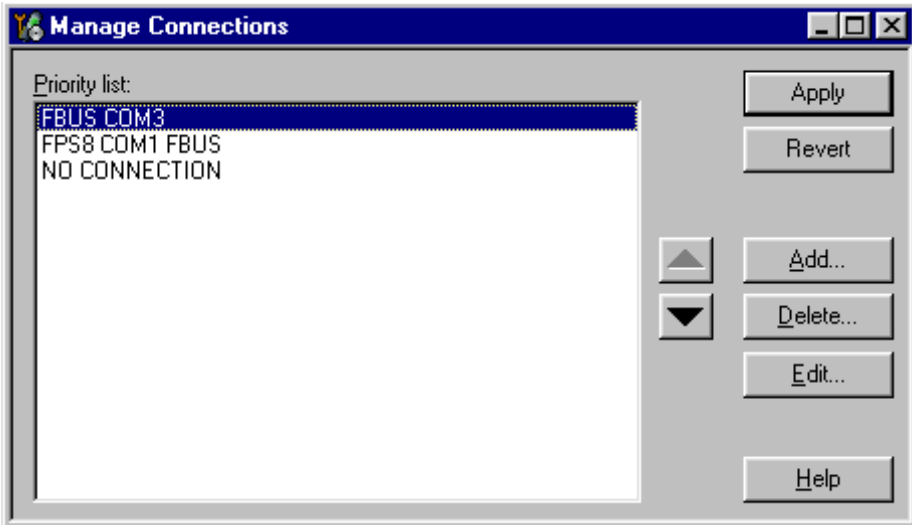
COMBOX_DEF_MEDIA: FBUS

Choose “Finish” to complete.

If you use the Wizard, connect the tools and a phone to your PC and the wizard will automatically try to configure the correct connection.

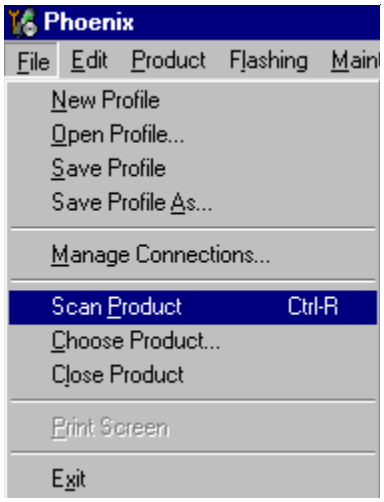
Activate the connection you want to use by clicking it and use up/down arrows to move it on top of the list. Choose “Apply”.

The connection is now selected and can be used after closing the “Manage Connections” window.

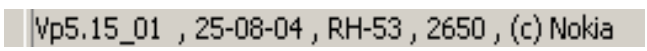


Selected connection will be shown on the right hand bottom corner of the screen.

To use the selected connection, connect the phone to Phoenix with correct service tools, make sure that it is switched on and select “Scan Product”.



When the Product is found, Phoenix will load product support and when everything is ready, name of the loaded product support module and its version will be shown on the bottom of the screen.



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How to Update Flash Support Files for FPS-8* and FLS-4S*

Before Installation

Install Phoenix Service SW

Install phone model Specific Datapackage for Phoenix

The flash support files are delivered in the same installation package with Phoenix data packages or newer Phoenix packages beginning from September 2003.

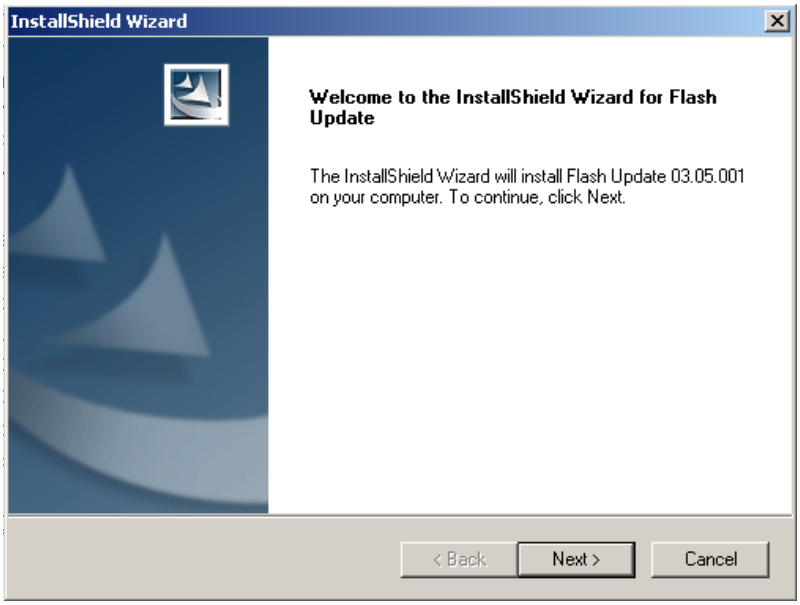
Normally it is enough to install the Phoenix and phone data package only because the Phoenix installarion always includes the latest flash update package files for FLS-4S / FPS-8*.

Separate installation package is for flash support files is available, and the files can be updated according to this instruction if updates appear between Phoenix / data package releases.

Installing the Flash Support Files

If you are not using separate installation package, you can skip this section and continue from yhe next section after installing a new Phone Data package.

Start by double clicking *flash_update_03_05_001.exe* . Installation begins.



IIf the same version of Flash Update package already exists, and you want to reinstall them, the prevous package is first uninstalled. Restart installation again after that.

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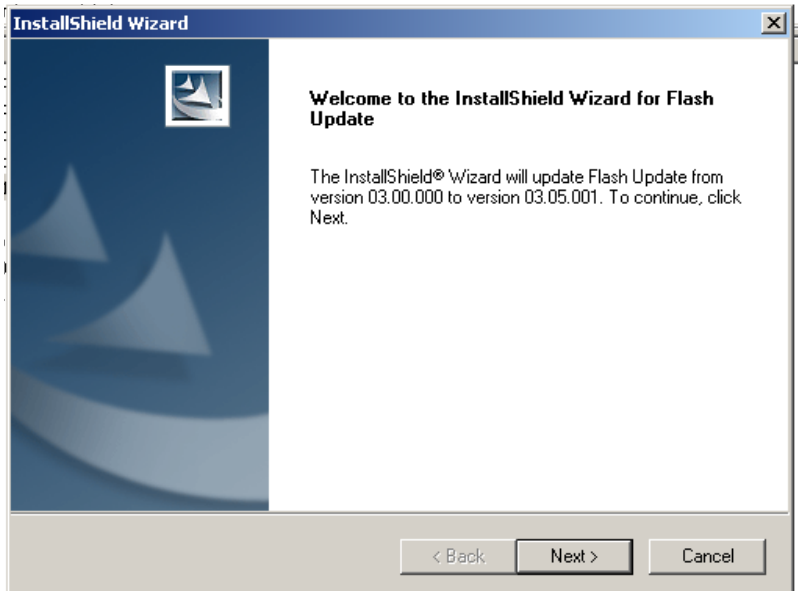
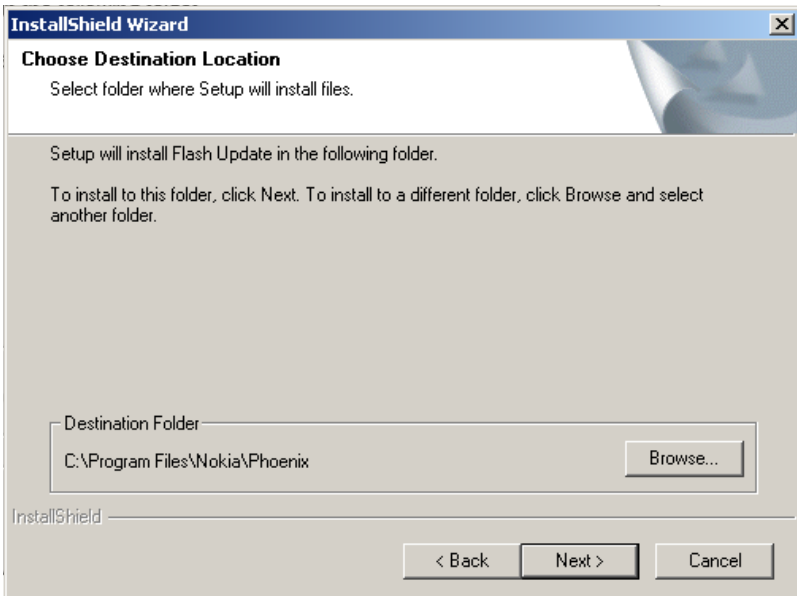
If you try to downgrade the existing version to older ones, the setup will be aborted. If yoy really want to downgrade, unistall newer files manually from Control Panel and then re run the installation again.

If an older version exists on your PC and it needs to be updated, Choose “Next” to continue installation.

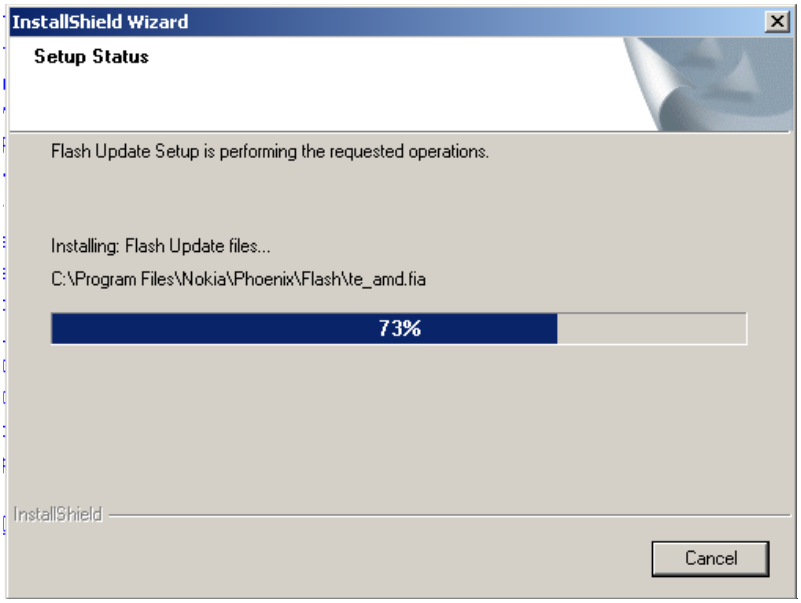


It is **highly** recommended to install the files to the default destination folder ***C:\Program Files\Nokia\Phoenix***.

Choose “Next” to continue. You may choose another location by selecting “Browse” (not recommended).



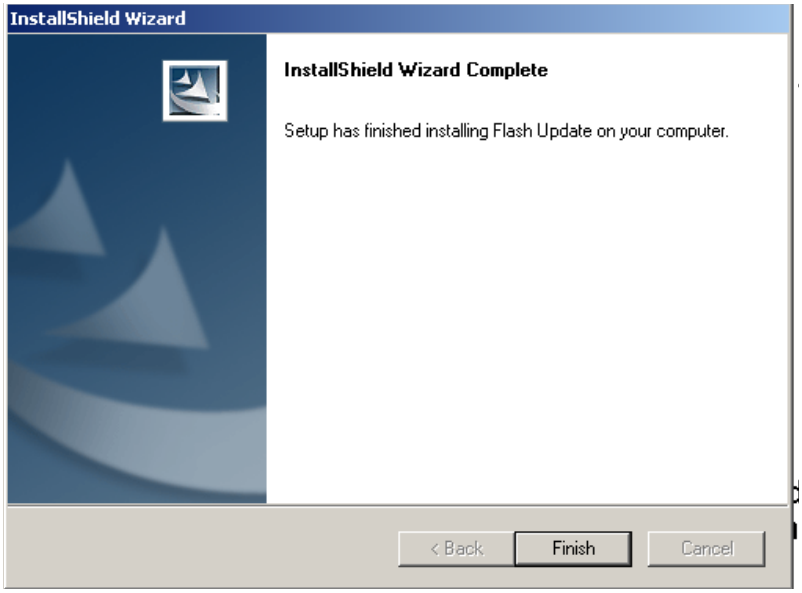
Installation continues…



Choose “Finish” to complete procedure.

- FLS-4S can be used right after Flash Update Package is installed.

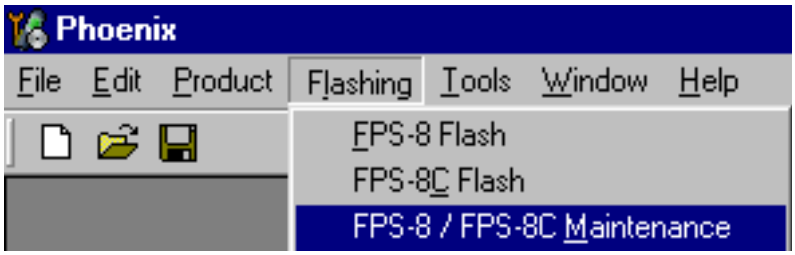
- FPS-8* must be updated by using Phoenix!



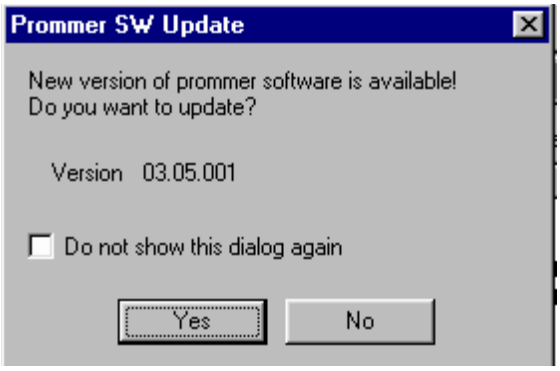
How to Update The FPS-8* Flash Prommer SW

Start Phoenix Service Software

Select"FPS-8 / FPS-8C maintenance" from"Flashing" menu.

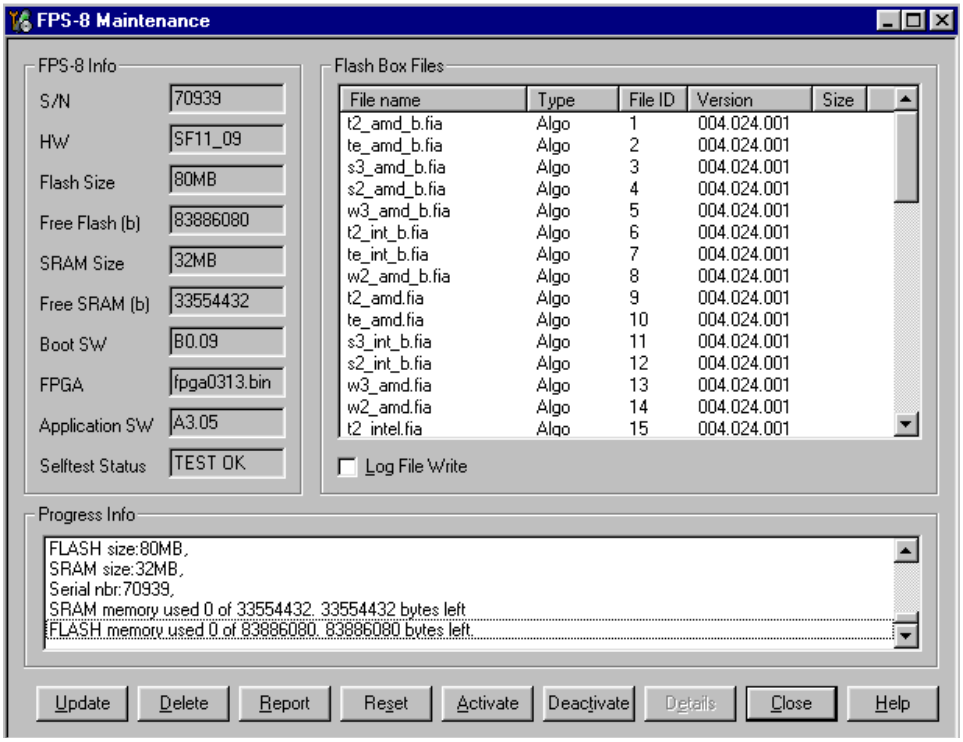


When new FPS-8 flash update package is installed to computer you will be asked to update the files to your FPS-8 Prommer. Select"Yes" to update files..

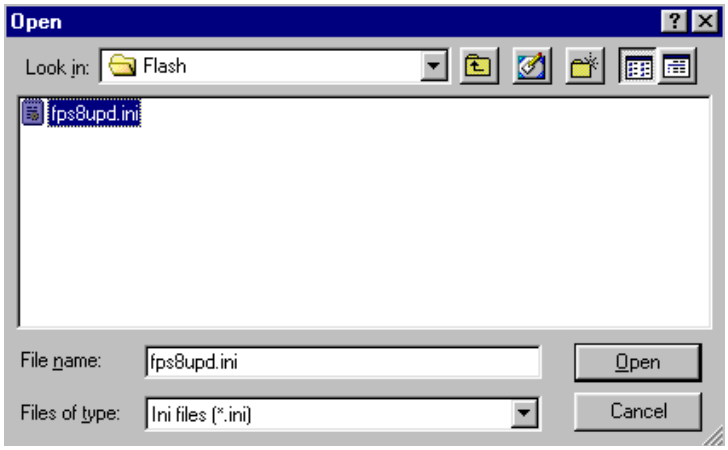


Update procedure takes a couple of minutes, please wait until you are notified that update has been successfull. Choose "OK" and close "FPS8 Maintenance" – UI. .

View after successful prommer software update



FPS-8 sw can also be updated by pressing”Update” button and selecting appropriate **fps8upd.ini** file under ***C:\Program Files\Nokia\Phoenix*\Flash** - directory



All files can be loaded separately to FPS-8. To do this, just press right mouse button in Flash box files” window and select file type to be loaded.

More information and help can be found from the “Help” dialog.

FPS-8 Activation and Deactivation

- Before the FPS-8 can be successfully used for phone programming, it must be first activated.
- If there is a need to send FPS-8 box to somewhere e.g. for repair, box must be first deactivated.

Activation

Before FPS-8 can be successfully used for phone programming, it must be first activated.

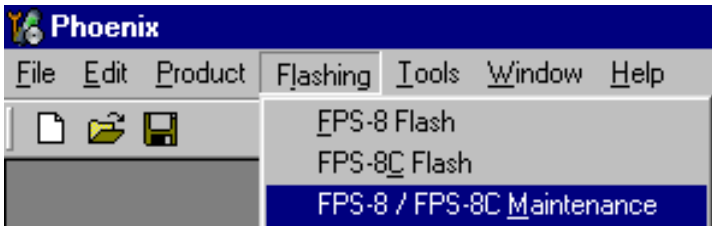
Fill in first “FPS-8 activation request” sheet, in the FPS-8 sales package and follow the instructions in the sheet.

When activation file is received (e.g. 00000.in), copy it to ***C:\ProgramFiles\Nokia\Phoenix\BoxActivation -*** Directory on your computer

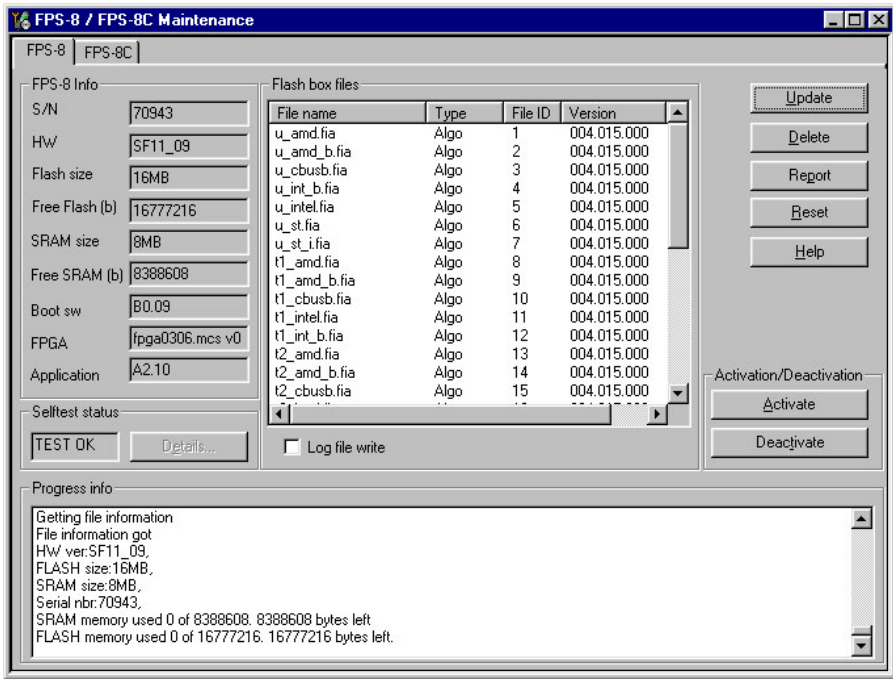
(This directory is created when Phoenix is installed).

Start Phoenix Service Software.

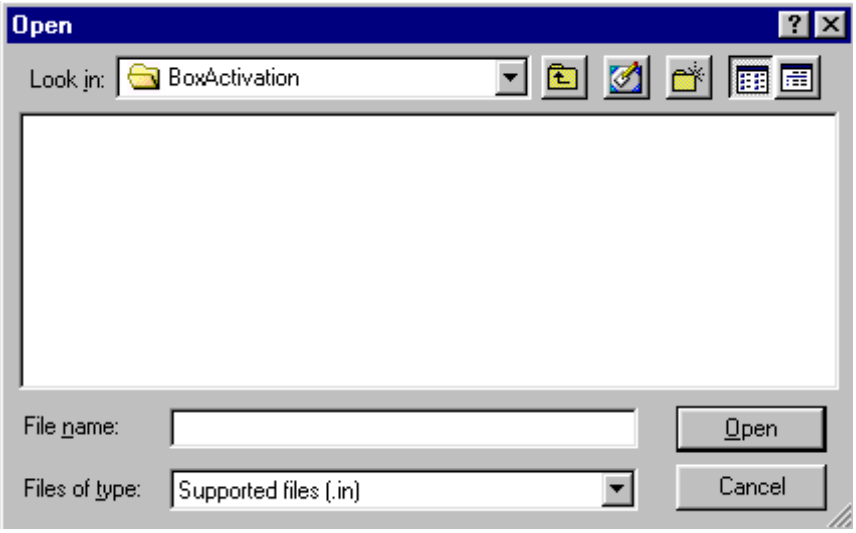
Select ”FPS-8 / FPS-8C maintenance” from ”Flashing” menu.



Select “Activate” from the “FPS8/8C Maintenance” – UI.



The activation file you saved to *C:\ProgramFiles\Nokia\Phoenix\BoxActivation* - directory will be shown (e.g. 00000.in), check that it is correct.



Box will be activated when you choose “Open”.

Turn FPS-8 power off and on to complete activation.

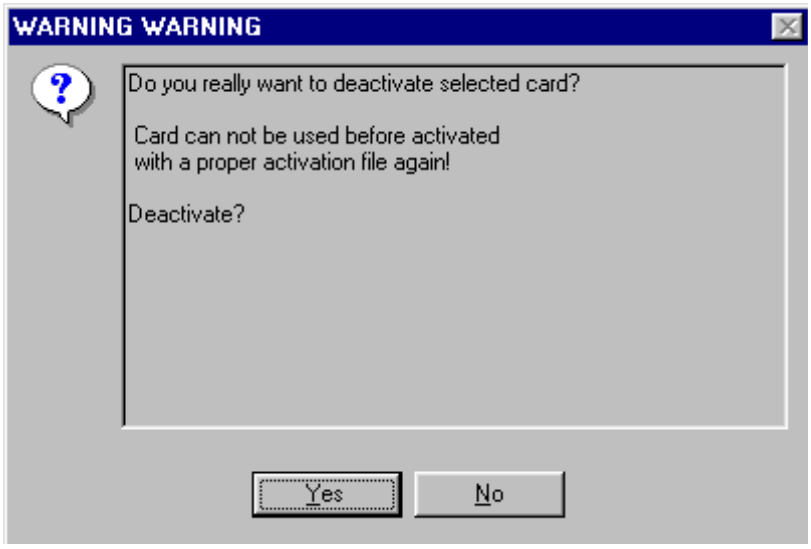
Deactivation

Start Phoenix Service Software.

Select ”FPS-8 / FPS-8C maintenance” from ”Flashing” menu.

Select “Deactivate” from the “FPS8/8C Maintenance” – UI.

Confirm Deactivation by choosing “Yes”, Box will be deactivated.



Turn FPS-8 power off and on to complete deactivation.

JBV-1 Docking Station SW

The JBV-1 Docking Station is a common tool for all DCT-4 generation products. In order to make the JBV-1 usable with different phone models, a phone specific Docking Station Adapter is used for different service functions.

The JBV-1 Docking Station contains Software (Firmware) which can be updated.

You need the following equipment to be able to update JBV-1 software:

- PC with USB connection
- Operating System supporting USB (Not Win 95 or NT)
- USB Cable (Can be purchased from shops or suppliers providing PC hardware and accessories)
- JBV-1 Docking Station
- External Power Supply 11-16V

Before Installation

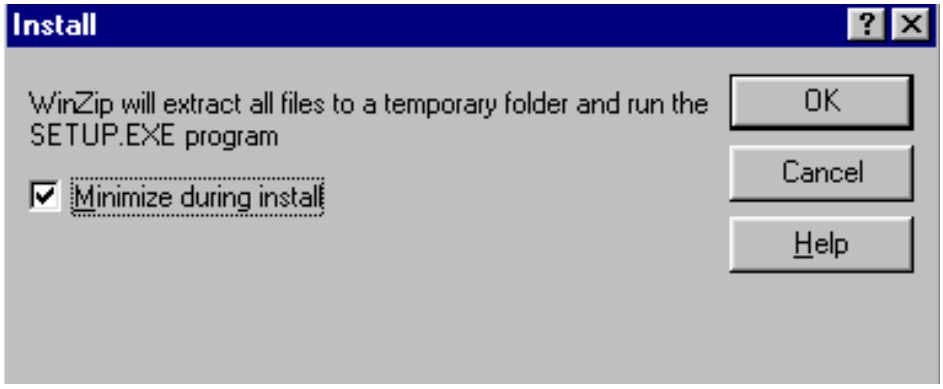
- Download *Jbv1_update.zip* – file to your computer (e.g. C:\TEMP) from your download web site.
- Close all other programs
- Follow instructions on the screen

Installing SW Needed for the JBV-1 SW Update

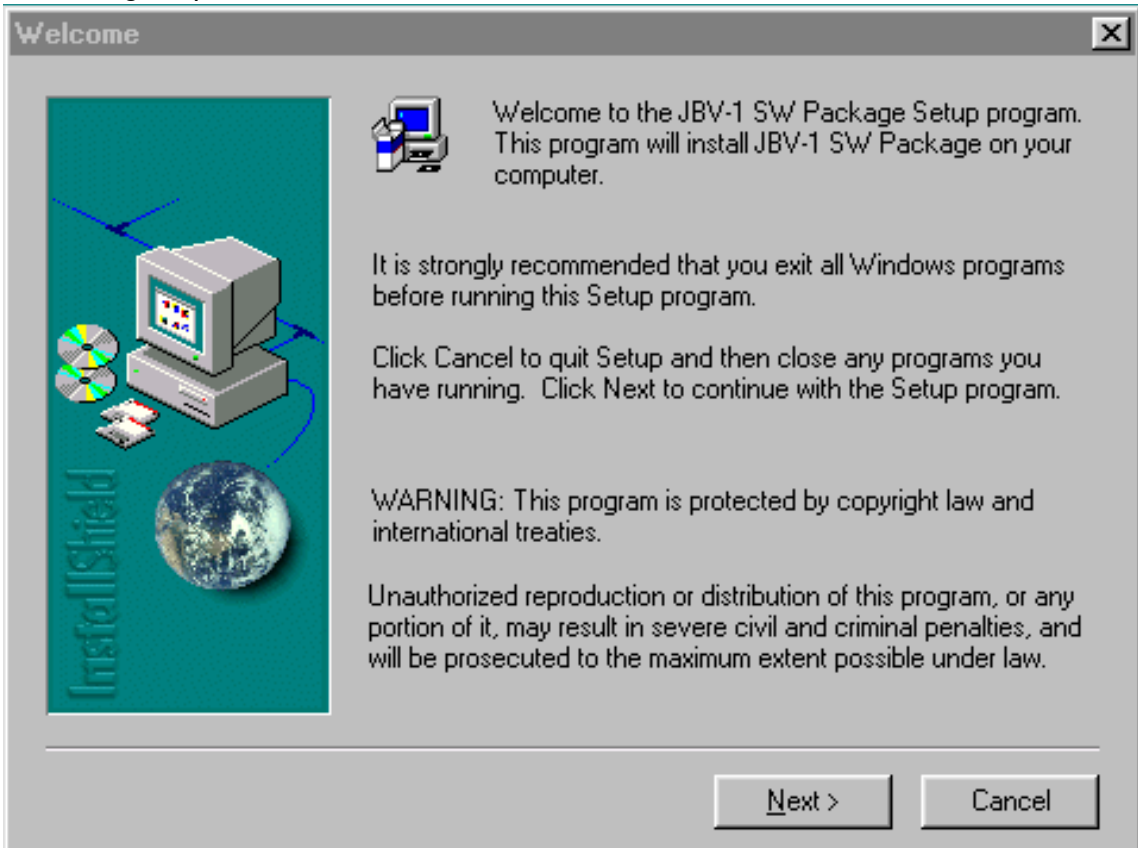
Note: DO NOT CONNECT THE USB CABLE / JBV-1 TO YOUR COMPUTER YET!

Run ***Jbv1_update.zip*** file and start SW Installation by double clicking ***Setup.exe***.

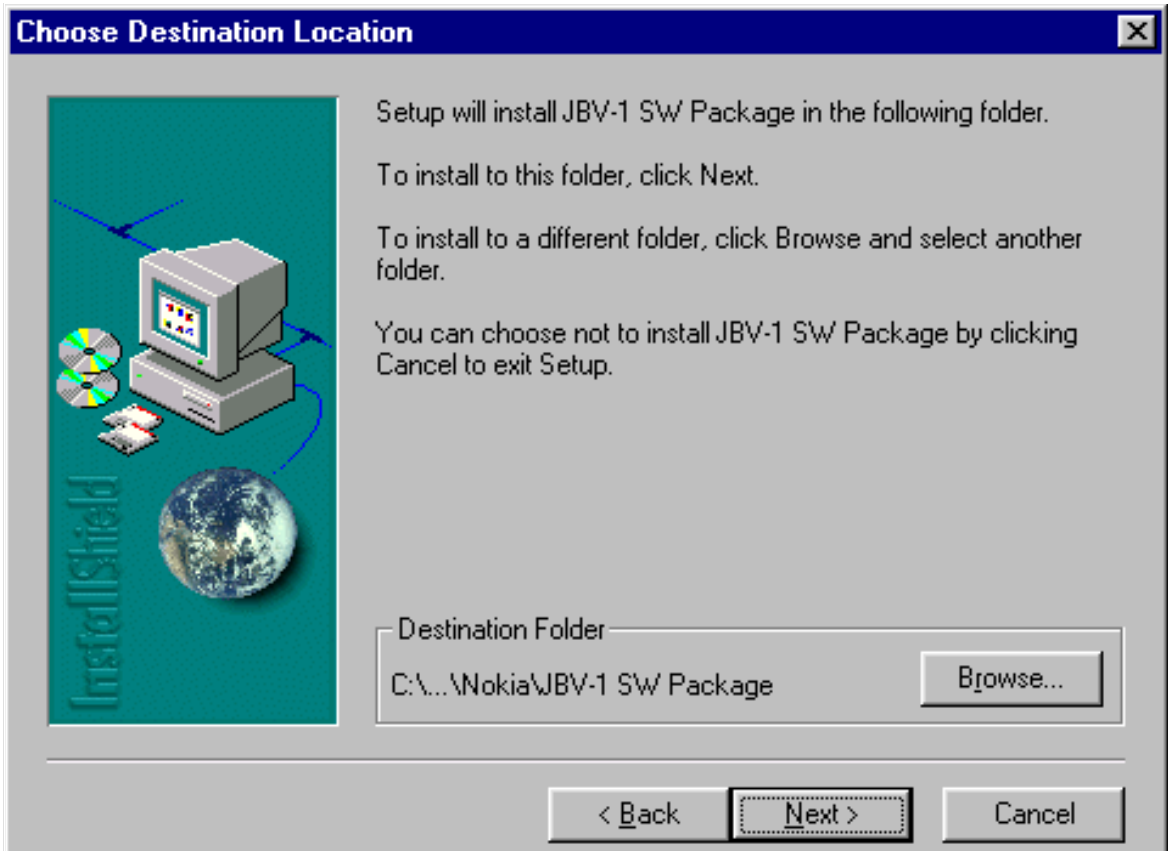
Files needed for JBV-1 Package setup Program will be extracted.



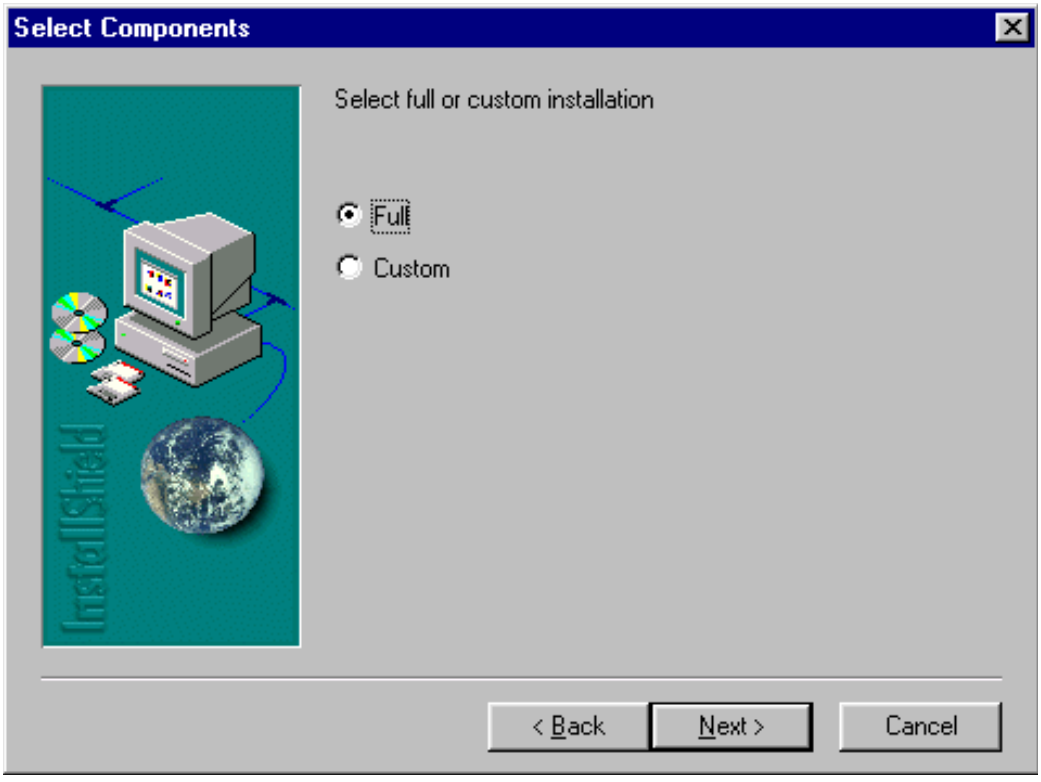
Installation begins, please read the information shown and Choose “Next” to continue.



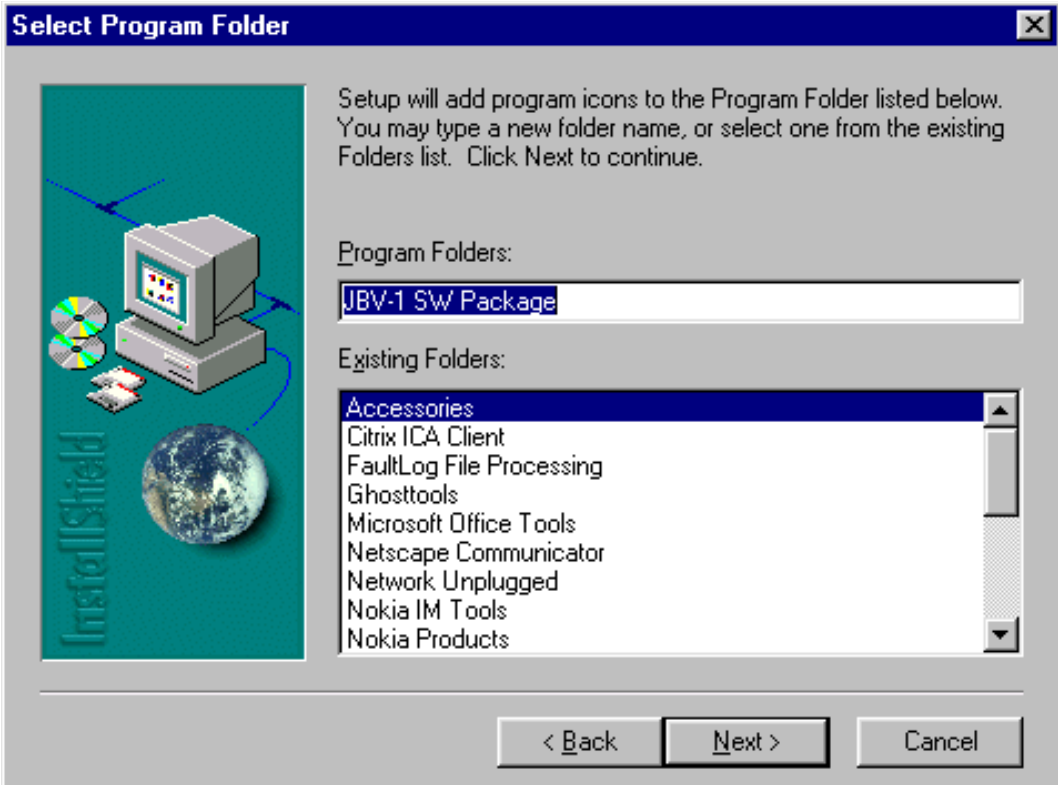
Use suggested destination folder where JBV-1 SW Package will be installed and choose “Next” to continue.



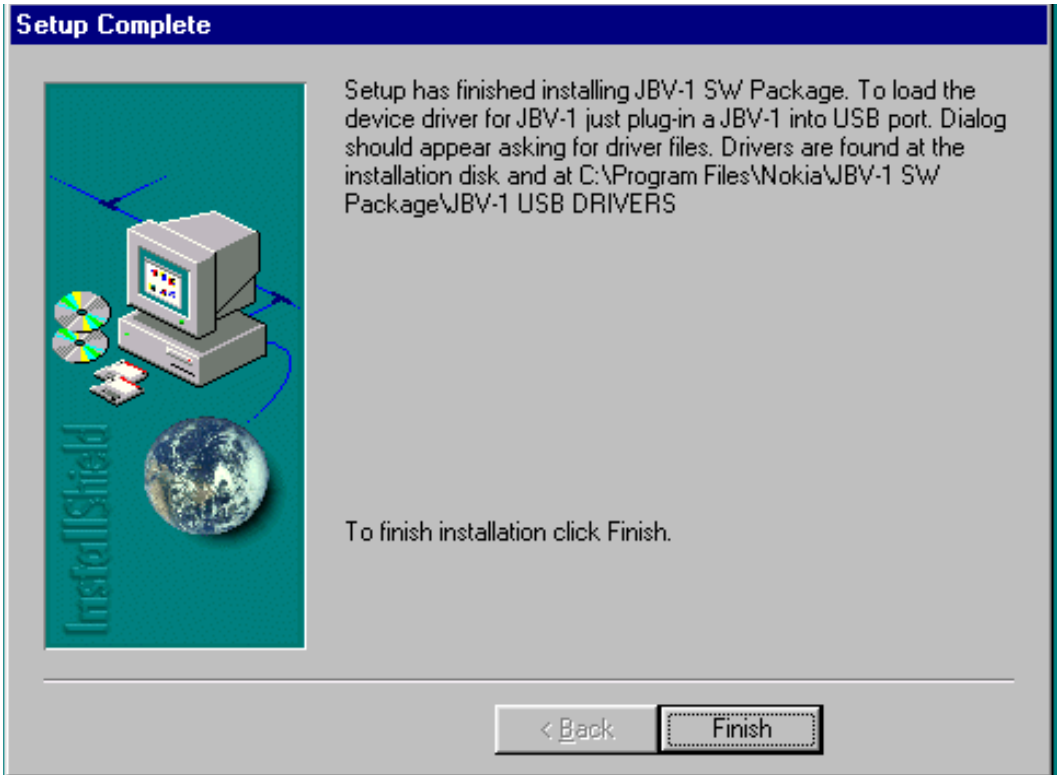
Select “Full” Installation and choose “Next” to continue



Program Folder will be created. Choose “Next” to continue, Software files will be installed.



After successful installation, choose “Finish” to complete.

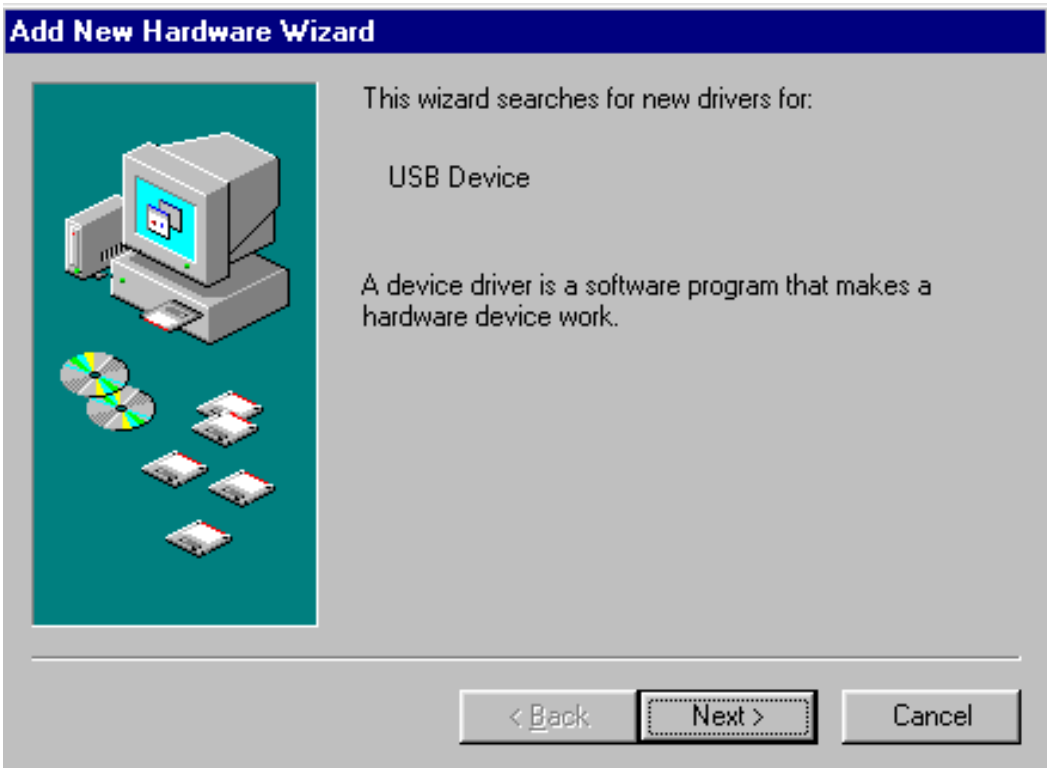


NOW YOU CAN CONNECT THE USB CABLE / JBV-1 TO YOUR COMPUTER!

Connect power to JBV-1 (11-16V DC) from external power supply, then connect USB Cable between JBV-1 USB connector and PC.

Windows will detect connected USB cable and detect drivers for new HW.

Follow the instructions and allow Windows to search and install the best drivers available. After this procedure the actual JBV-1 SW update can begin.



Updating the JBV-1 Docking Station Software

The next step is to install or update the JBV-1 USB drivers which are delivered with the JBV-1 SW installation package. They can be found in folder:

C:\Program Files\Nokia\ JBV-1 Firmware Update\JBV-1USB driver

If there is no previously installed JBV-1 Firmware update package installed on your computer, Windows will detect connected USB cable and detect drivers for new HW. You will be prompted about this, please follow the instructions and allow Windows to search and install the best Drivers available.

If there is a previously installed JBV-1 Firmware update package (v 17 or older) on your computer, please update the JBV-1 USB Driver. *Please see the readme.txt – file under*

C:\Program Files\Nokia\ JBV-1 Firmware Update\JBV-1USB driver – folder for instructions on how to update the JBV-1 USB Driver.

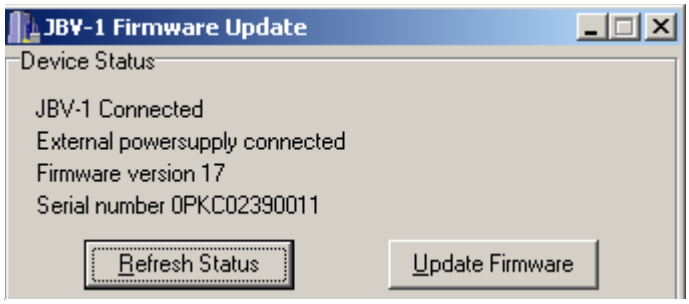
After you have installed or updated the JBV-1 USB driver, the actual JBV-1 SW update can begin.

Go to folder *C:\Program Files\Nokia\JBV-1 Firmware Update\JBV-1 Firmware Update* and start JBV-1 Update SW by double clicking **fwup.exe**.

JBV-1 Firmware update starts and shows current satus of the JBV-1 connected.

If firmware version read from your JBV-1 is not the latest one available (v. 17 or older) , it needs to be updated to version 18 by choosing “Update Firmware”.

”.



To update your JBV-1 to new version 18 choose file *JBV1v18.CDE* and “Open”

Please wait, it takes a while until you can hear a “**click**” from the JBV-1.

The older sw file JBV1v17.CDE is visible in this view only if the previous JBV-1 SW package has been installed on your computer.

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Service Tool Concept For Baseband Tuning Operations

EM calibrations should be carried out in JBV-1 Docking Station equipped with DA-27 Docking Station Adapter.

Note: RF tunings must be carried out in MJ-30 module jig, JBV-1.

Power to JBV-1 should be supplied from an external DC power supply, not FPS-8 prommer.

JBV-1 input voltages:

Maximum +16 VDC

Nominal input for RF tunings is +12 V DC.

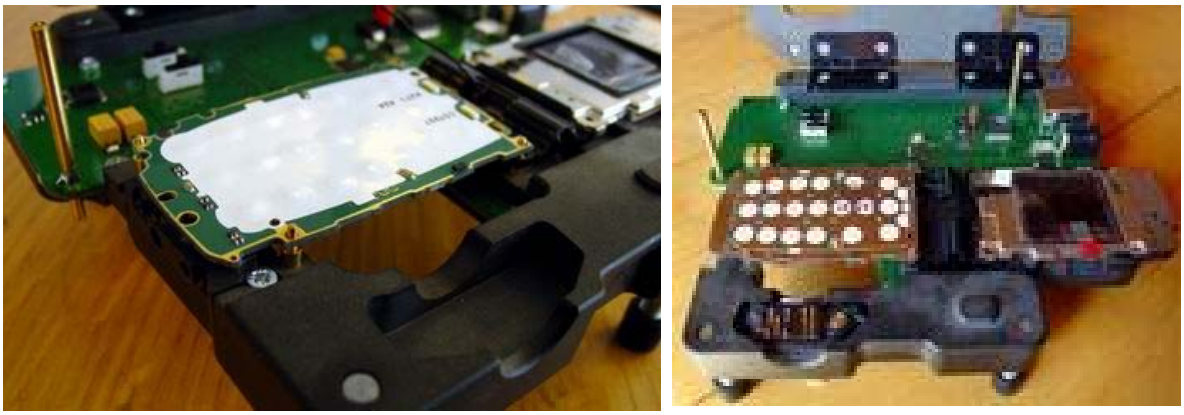


Figure 1:Service concept for baseband tunings

Table 1:

Item	Type	Description	Product code
1	JBV-1	Docking station	0770298
2	DA-27	Docking station adapter	0780352
3	AXS-4	DC9-DC9 cable	0730090
5	PCS-1	Power cable	0730012
6	DAU-9S	Service FBUS cable	0730108
7	PKD-1	Software protection key	0750018

Baseband Tuning Operations

Energy Management Tuning

External power supply needed.

Energy Management (EM) Calibration is used for calibrating Battery and Charger settings of the phone.

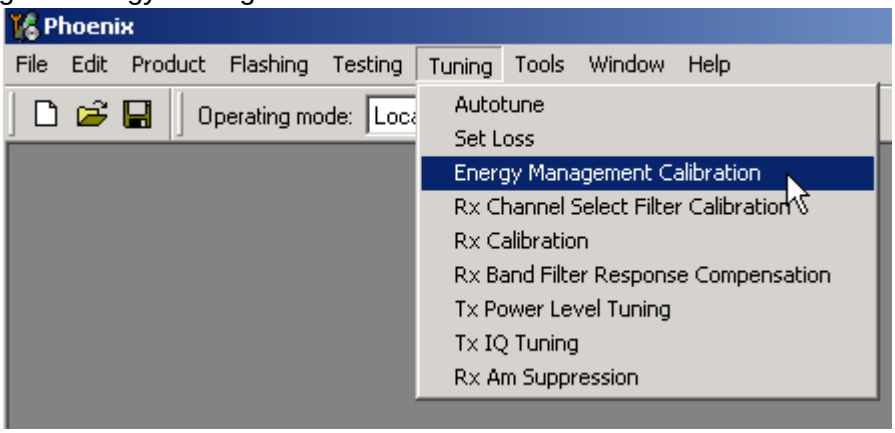
Preparation for EM Calibration:

- Connect the DC Cable SCB-3 between JBV-1 and Vin of the Phone for Charger calibration.

- Connect 12…15 V from the Power Supply to JBV-1.

- NOTE! Check that the connection is F-BUS (does not work with M-BUS).

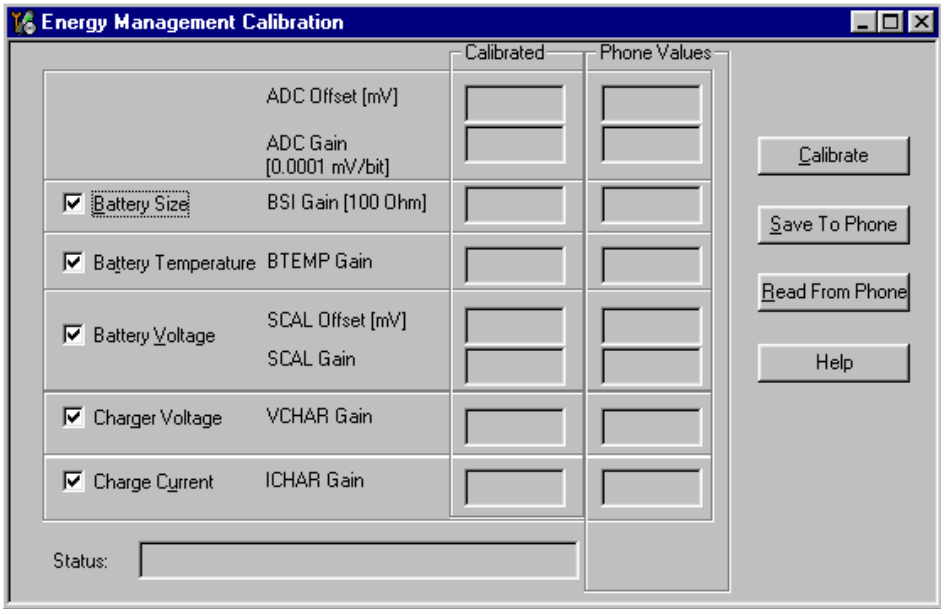
Select Tuning => Energy Management Calibration.



Energy Management values to be calibrated are checked.

Select “Read from Phone” to show the current values in the phone memory and to check that the communication with the phone works.

Select “Calibrate” to run the selected calibrations.



Limits for Energy Management Calibration:

Table 2:

Parameter	Min.	Max	Note
ADC gain	25400	29000	VBatt, BSI, BTemp
DC offset	-50	50	ADC voltage offset
BSI gain	970	1100	ADC BSI calibration gain
BTEMP gain	2075	2275	ADC BTEMP calibration gain
VBAT gain	10000	11000	ADC VBATT Voltage gain
VBAT offset	2300	2900	ADC VBATT Voltage offset scale
VCHAR	58000	62000	Charge voltage
ICHAR	4050	4800	charge current

If values shown are within limits select “Save To Phone” to save the values in the phone.

NOTE! Only the values of the checked tunings (Battery size, Battery Temperature etc…) are saved.

Close the “Energy Management Calibration” – dialog to end tuning.

You must manually switch the phone on after exiting “Energy Management Calibration” – dialog.

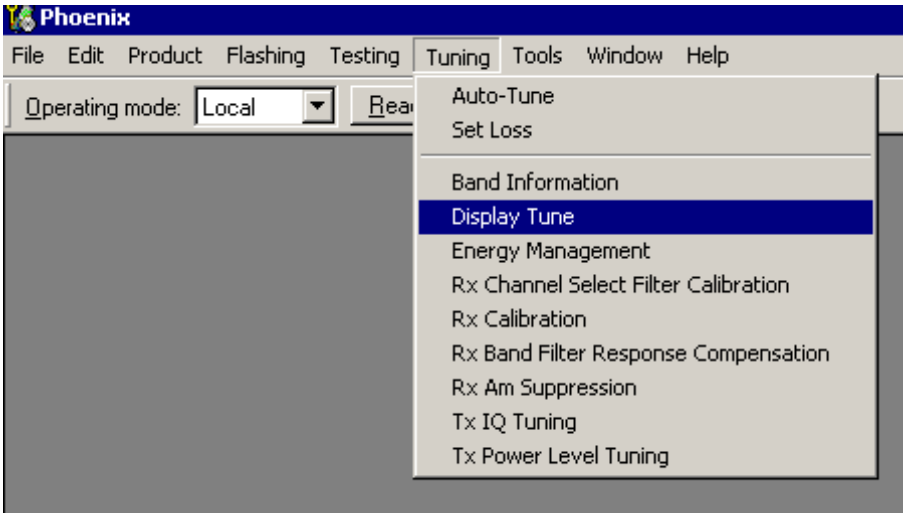
LCD Contrast Tuning

Extra equipment not needed.

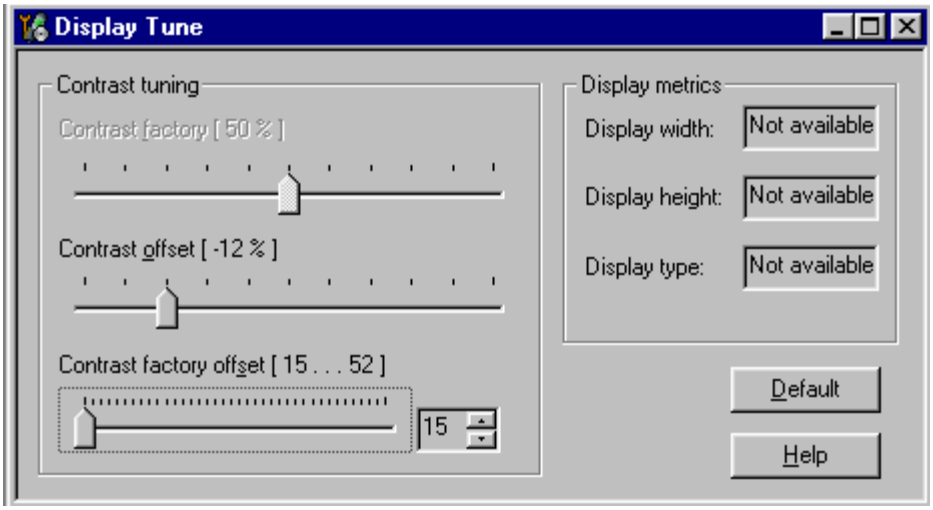
This function is used to calibrate the LCD Contrast.

Must be done when LCD module is changed and there is considerable difference in the contrast.

Select Testing => Display Tune



Move the sliders to reach good LCD contrast.



Close the ”Display tune” dialog to end tuning.

Receiver Tuning: Quick Guide for Tuning With Phoenix

General remarks

RF tunings must be performed in the same order as shown in this document. The order of the corresponding menu items in the Service SW may be different.

If baseband tunings are needed, they should be completed before the RF tunings.

Avoid unnecessary tuning – factory-tuning values are always the most accurate ones.

NOTE! RF tunings need to be done ONLY if any RF block component is replaced.

Screen shots described in this document may change as the service software is developed.

Kindly refer to the Phoenix help files, the phone model specific service manual and bulletins for help.

Service Tool Concept for RF Tuning Operations

NOTE! RF tunings need to be done ONLY if any RF block component is replaced.

- All RF tuning operations must be carried out in the MJ-36 Module Jig!
- Power to MJ-36 must be supplied from an external DC power supply, not FPS-8 prommer
- MJ-15 input voltages:

  Maximum + 5 VDC

  Nominal input for RF tunings is +4.2 V DC

  Minimum +3V DC

- Remember the cable attenuation when setting required RF levels

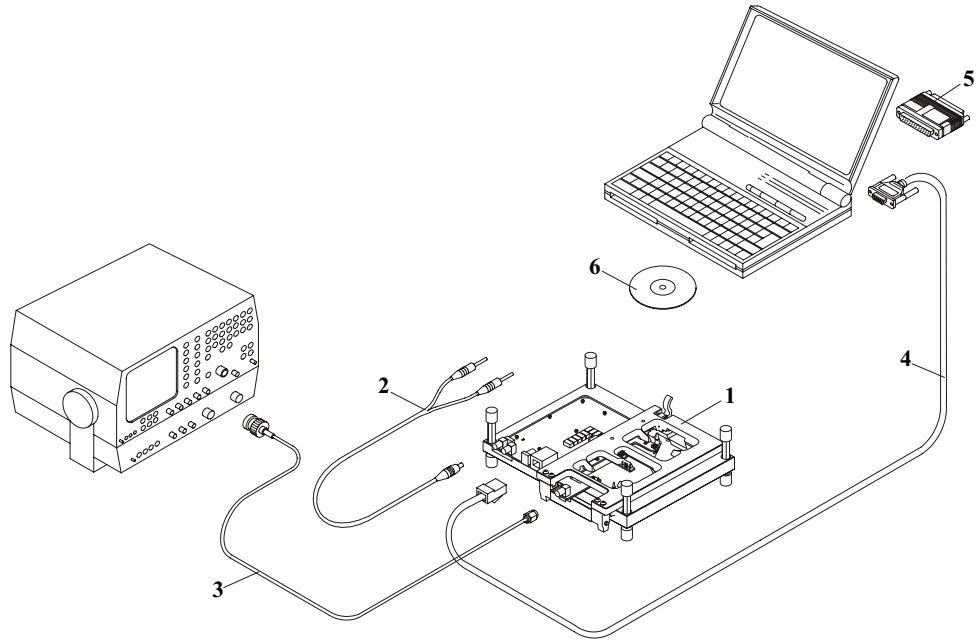


Figure 2:RF tuning setup

Table 3:

Item:	Type:	Service accessory:	Product code:
1	MJ-36	Module jig	0770856
2	PCS-1	DC power cable	0730012
3	XCS-1	Modular cable	0730178
4	DAU-9S	Service FBUS cable	0730108

Table 3:

Item:	Type:	Service accessory:	Product code:
5	PKD-1	Software protection key	0750018

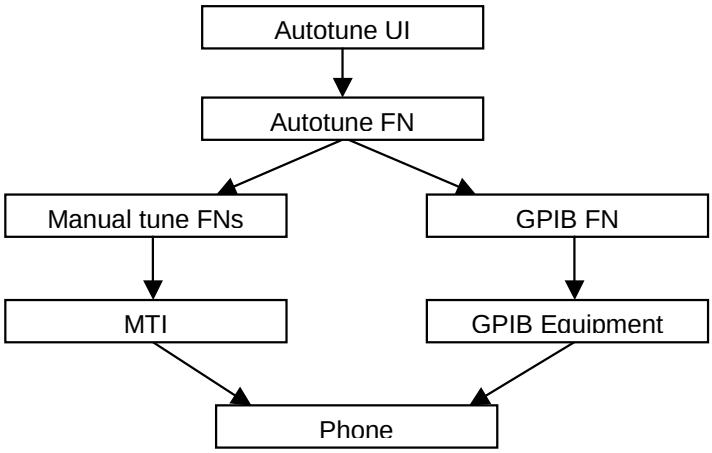
Autotuning

Autotune feature is designed to align product's RF part easier and faster. By this autotune component the product is tuned automatically. The user only needs to press '**Tune'** and the product's RF is tuned and results are shown to the user. Component controls all the needed RF equipment (RF generator and TX measuring device) except voltage supplier.

NOTE! Automatic tuning is ALWAYS the primary tuning mode. Manual tuning is not recommended.

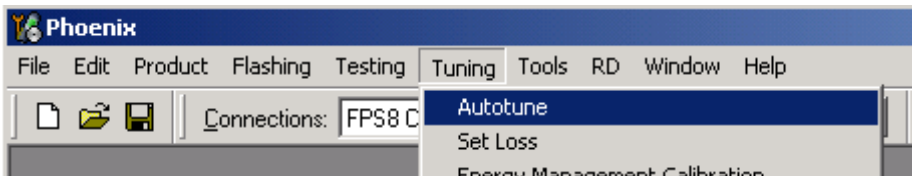
Following diagram describes how the Autotune component is located in the TSS architecture:

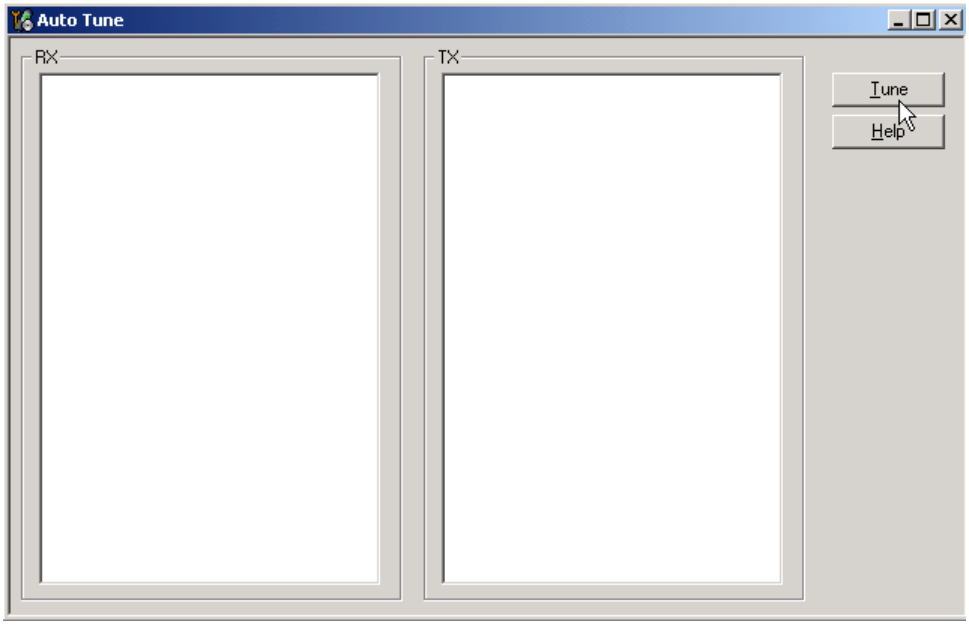
Figure 3: Autotune component in TSS architecture



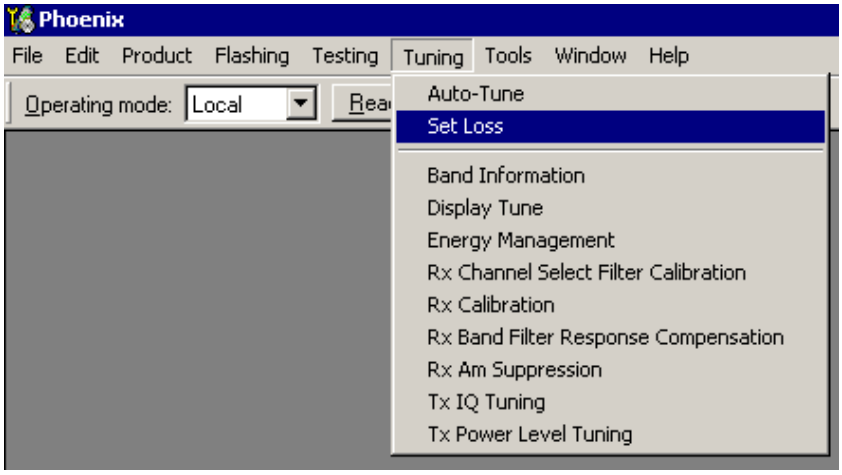
Autotune is a pair of two different components. One is User Interface and the other is FunctioNal. UI does not contain any functionality. MTI takes care of phonet messages.

The Autotune component can be found under Tuning menu:



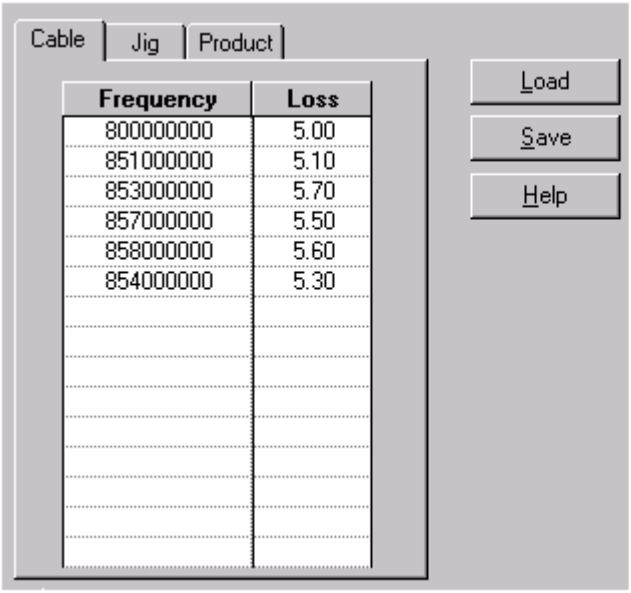


Set Loss



This is the component for saving RF-losses (of cables and jigs) to file. These loss values are needed when you tune the phone with Phoenix (using Auto-Tune component). When you measure the losses you have to be very careful, because these values affect directly how well the phone is tuned.

> *NOTE! This component is only for Auto-Tune uses. Components are protected by PKD-1CS, PKD-1NS, PKD-1 and PKD-1P dongles using standard TSS protection procedure. Autotuning itself is possible with all these dongles but with PKD-1P and PKD-1 dongles user is not able to set the loss.*



Environment

Hardware requirements:

PC with Windows 98/2000/NT

Power supply

Product specific module jig

RF-splitter and -cables

RF equipment (only one of each is needed)

Tx:

Agilent E4406 (VSA series transmitter tester)

Agilent E4445 (PSA series transmitter tester)

Rohde&Schwarz, FSE-family of Signal Analyzers

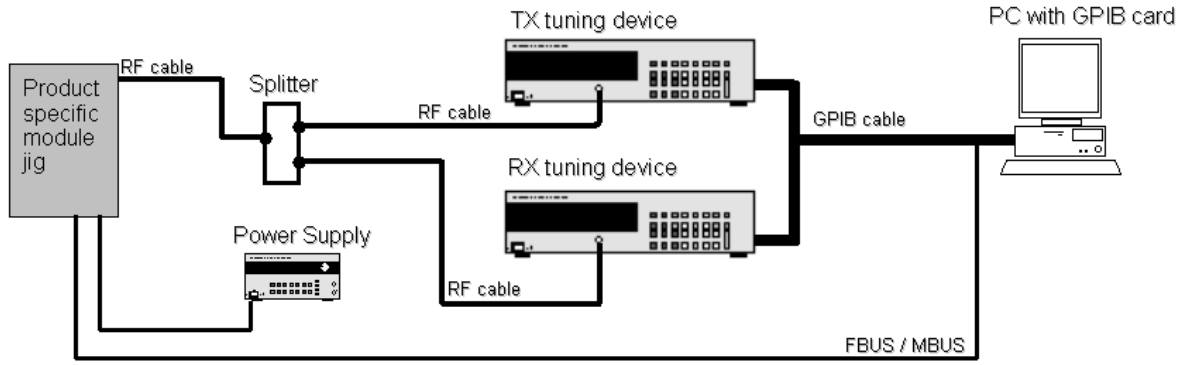
Rohde&Schwarz, FSIQ-family of Signal Analyzers

Rx:

Agilent ESG family of RF Signal Generators

Rohde&Schwarz, SME-family of Signal Generators

Figure 4:Setup environment



GPIB addresses are not defined. Component finds the addresses and uses them automatically.

If several TX tuning devices are connected, this component uses Agilent (VSA or PSA). In RX side, Agilent has highest priority.

Protection

Components are protected by PKD-1CS, PKD-1NS, PKD-1 and PKD-1P dongles using standard TSS protection procedure. Autotuning itself is possible with all these dongles but with PKD-1P and PKD-1 dongles user is not able to set the loss.

Receiver Manual Tuning

RX Channel Select Filter Calibration

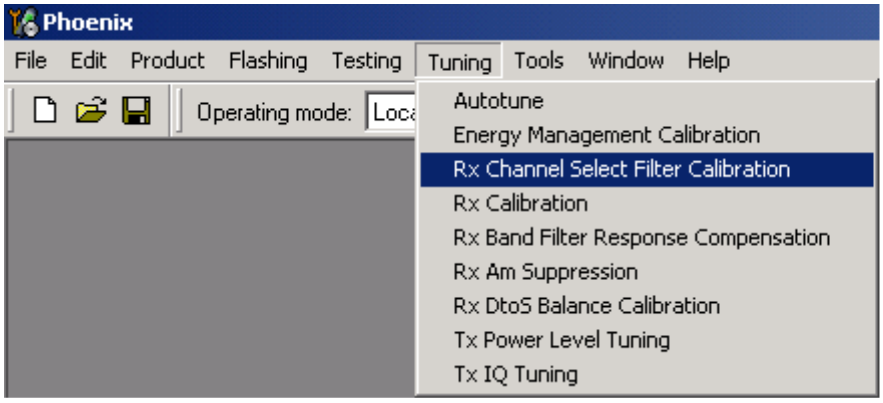
Extra equipment / external RF signal not needed.

Must be done before other RX calibrations.

This function is used to calibrate RX channel select filter in GSM Phones.

Rx Channel select filter is tuned only in one band = Single calibration for both bands.

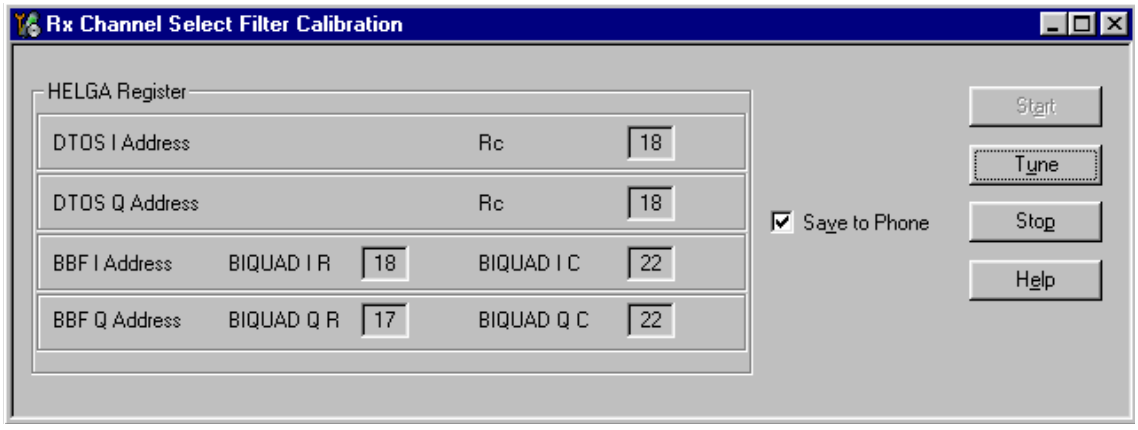
Select Tuning => Rx Channel select filter calibration.



“Save to Phone “ is checked by default

Uncheck “Save to Phone “ if you don´t want the values to be saved to phone (eg testing)!

Press "Tune" to start the tuning



Tuning values must be 0…31

If values shown are within limits, choose “Stop”

Close the “RX Channel Select Filter Calibration“-dialog to end tuning

Close the Rx Channel select filter calibration dialog, the values are saved to phone

RX Calibration

RF generator needed.

This tuning performs RX Calibration.

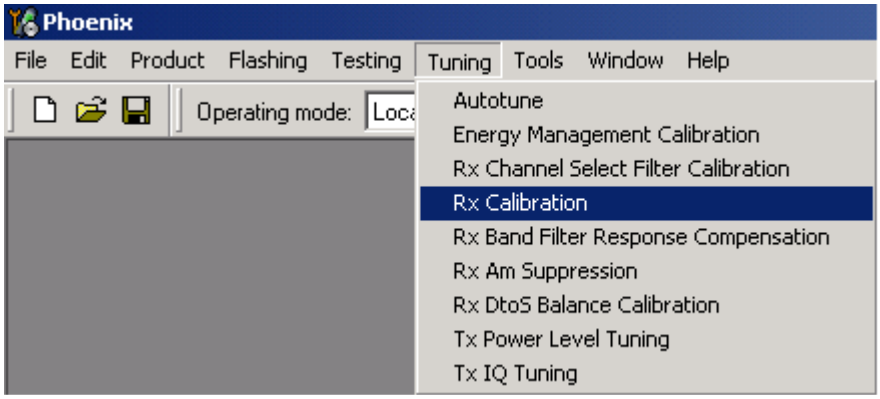
Must be done separately on every band!

Calibration is automatically performed at GSM850, then at GSM1800 and finally at GSM1900 band. If tuning is successful, it continues in the next band.

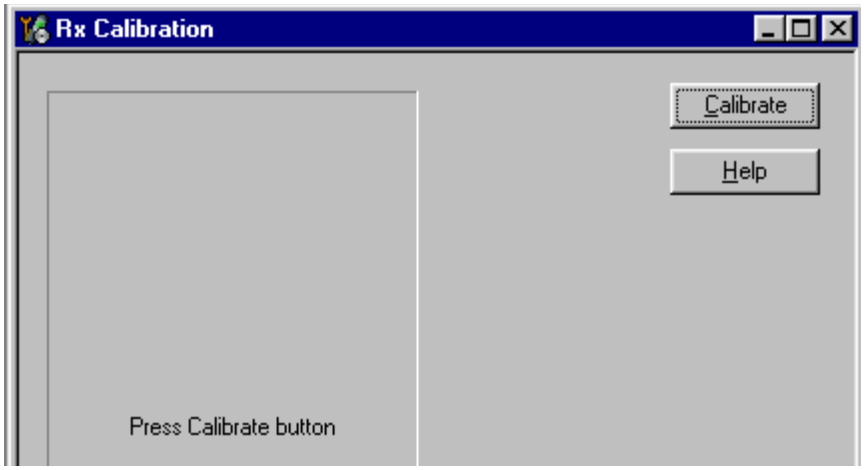
AFC tuning is done while GSM850 band RX Calibration is performed.

Remember to take jig and cable attenuations into account!

Select Tuning => Rx calibration

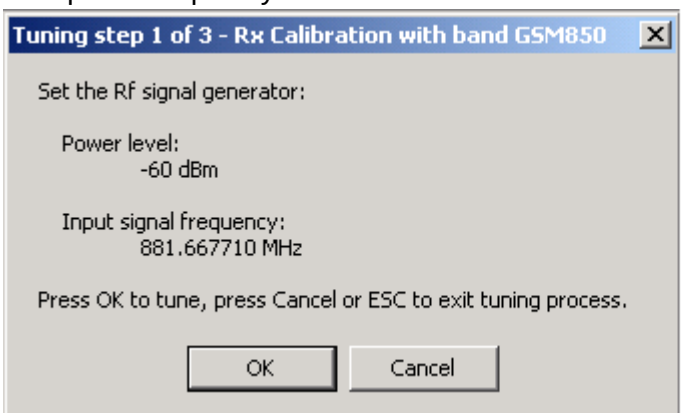


Press “Calibrate"´to start tuning.



Set RF generator to required GSM850 frequency => OK

Set RF generator to required frequency => OK



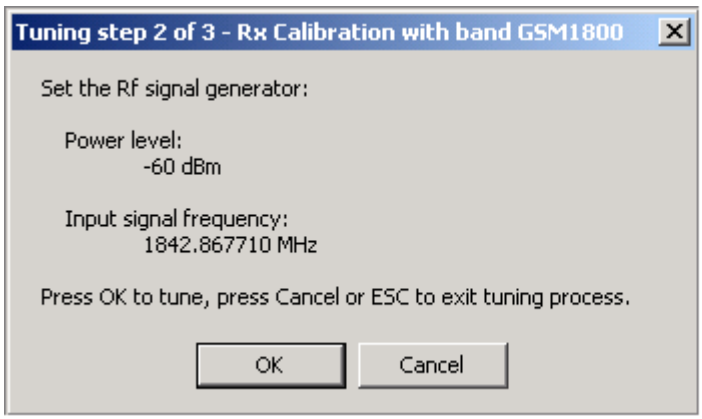
Tuning values and ADC readings are shown.

Typical values and limits in GSM850 RX Calibration:

Table 4:

GSM850	Typical value	Low limit	High limit
Afc value:	-90	-350	350
Afc slope:	270	150	350
Rssi 0:	65.09375	58	68
Rssi 1:	71.09375	64	74
Rssi 2:	76.90625	70	80
Rssi 3:	82.90625	76	86
Rssi 4:	88.90625	82	92
Rssi 5:	93.71875	88	98
Rssi 6:	99.71875	94	104
Rssi 7:	105.53125	100	110
Rssi 8:	111.53125	106	116
Rssi 9:	117.53125	112	122
Rssi 10:	123.53125	118	128
Rssi 11:	129.53125	124	134
Rssi 12:	135.53125	130	140
Rssi 13:	141.53125	136	146
Rssi 14:	147.53125	142	152

Set RFgenerator to required GSM1800 frequency => OK



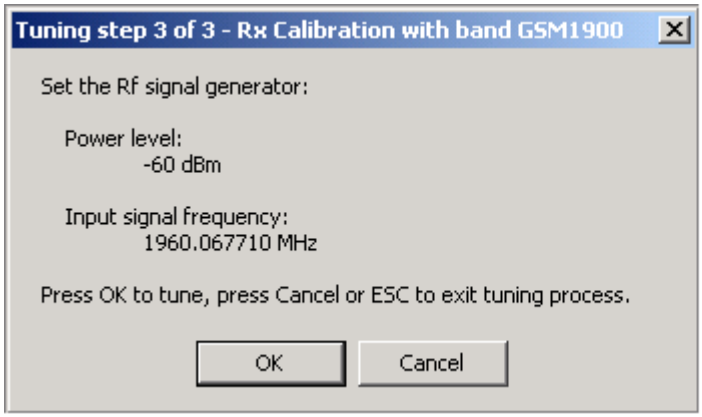
Tuning values and ADC readings are shown.

Typical values and limits in (GSM1800) RX Calibration

Table 5:

GSM1800	Typical value	Low limit	High limit
Rssi 0:	62.40625	58	68
Rssi 1:	68.40625	64	74
Rssi 2:	74.265625	70	80
Rssi 3:	80.265625	76	86
Rssi 4:	86.265625	82	92
Rssi 5:	91.859375	88	98
Rssi 6:	97.859375	94	104
Rssi 7:	103.71875	100	110
Rssi 8:	109.71875	106	116
Rssi 9:	115.71875	112	122
Rssi 10:	121.71875	118	128
Rssi 11:	127.71875	124	134
Rssi 12:	133.71875	130	140
Rssi 13:	139.71875	136	146
Rssi 14:	145.71875	142	152

Set the RF generator to required GSM1900 frequency => OK



Tuning values and ADC readings are shown.

Typical values and limits in (GSM1900) RX Calibration

Table 6:

GSM1900	Typical value	Low limit	High limit
Rssi 0:	66.25	61	71
Rssi 1:	72.25	67	77
Rssi 2:	78.09375	73	83
Rssi 3:	84.09375	79	89
Rssi 4:	90.09375	85	95
Rssi 5:	93.25	88	98
Rssi 6:	99.25	94	104
Rssi 7:	105.09375	100	110
Rssi 8:	111.09375	106	116
Rssi 9:	117.09375	112	122
Rssi 10:	123.09375	118	128
Rssi 11:	129.09375	124	134
Rssi 12:	135.09375	130	140
Rssi 13:	141.09375	136	146
Rssi 14:	147.09375	142	152

If values are within limits, they are saved to the phone after successful tuning of each band.

Close the “Rx Calibration” dialog to end tuning

RX Band Filter Response Compensation

RF generator needed.

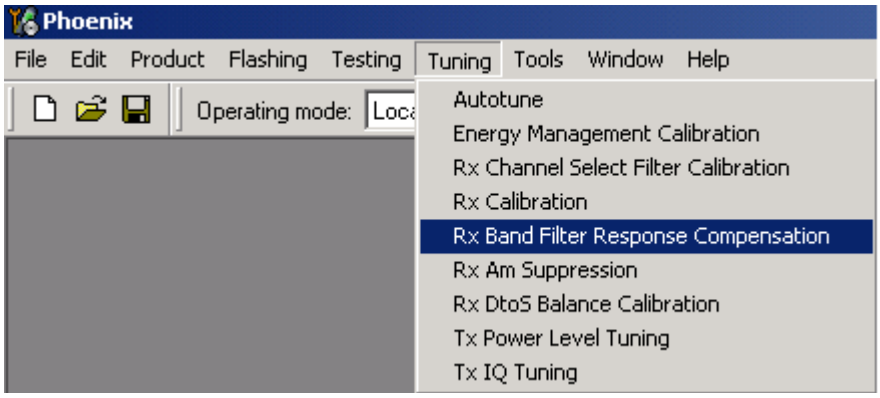
This operation must be done separately on each band!

Start RX Calibration at GSM850, then continue at GSM1800 band and finally on the GSM1900 band

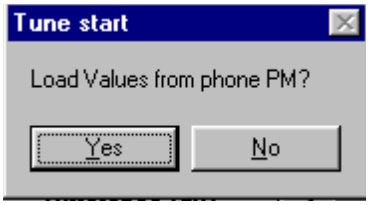
NOTE! Remember to do RX calibration before doing Rx Band Filter Response Compensation!

Remember to take jig and cable attenuations into account!

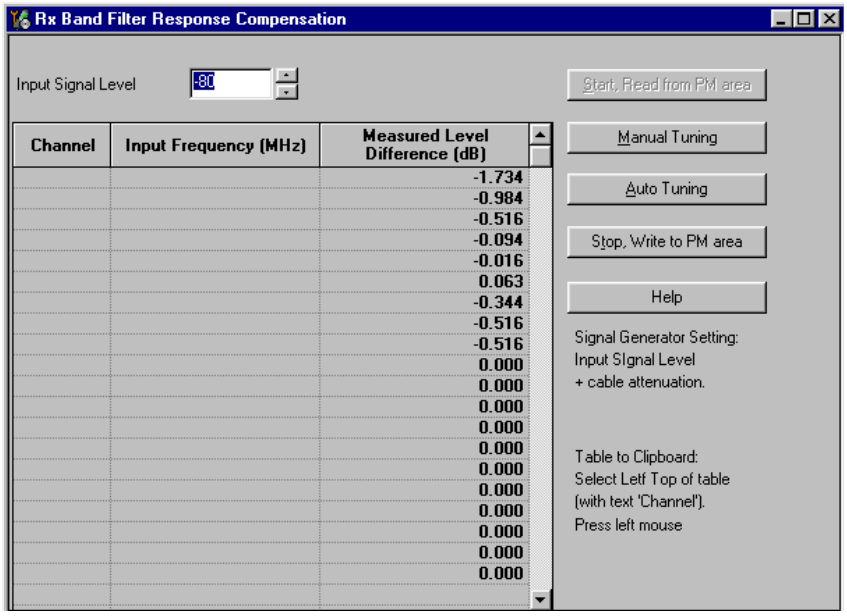
Select Tuning => Rx band filter response compensation



Select “Yes” to start tuning with values already saved to the phone



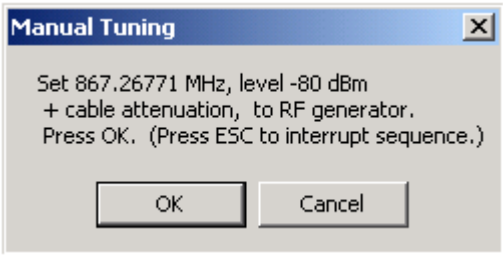
Select "Manual tuning" and tuning starts.



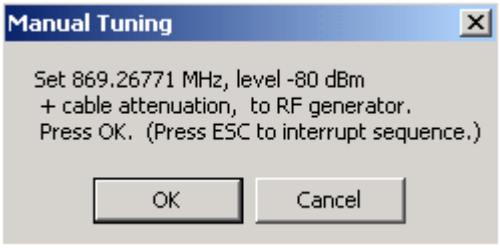
You are asked to supply 9 different RF frequencies to the phone.

The tuning begins from GSM850 band and continues the same way for GSM 1800 and GSM1900 bands

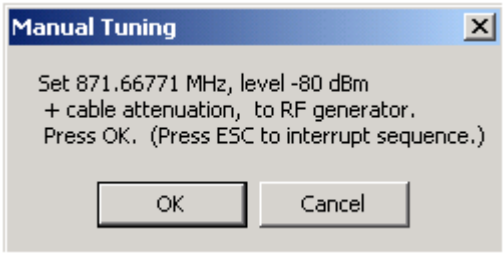
Set the first required frequency and level => OK



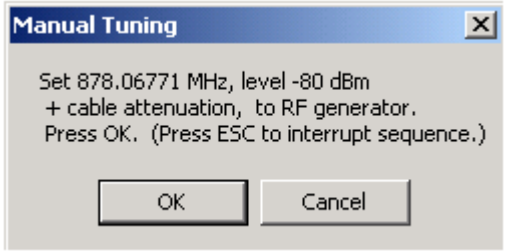
Set the 2nd required frequency and level => OK



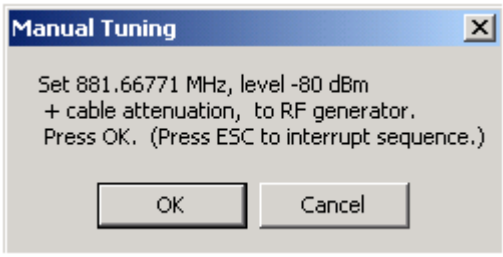
Set the 3rd required frequency and level => OK



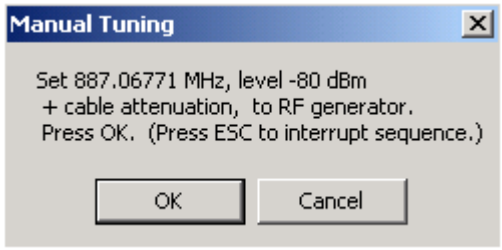
Set the 4th required frequency and level => OK



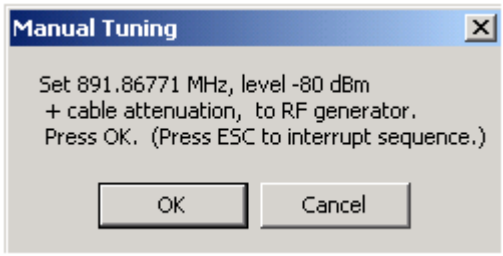
Set the 5th required frequency and level => OK



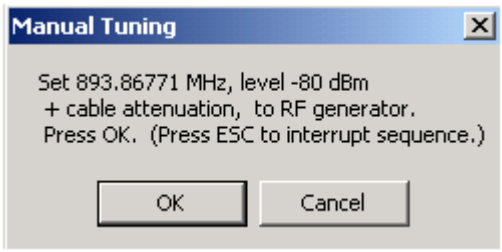
Set the 6th required frequency and level => OK



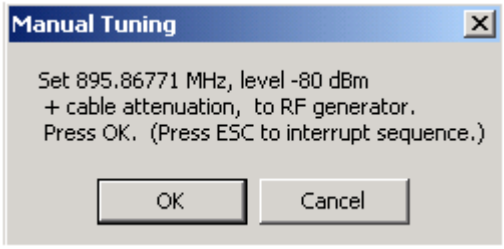
Set the 7th required frequency and level => OK



Set the the 8th required frequency and level => OK



Set 9th required frequency and level => OK

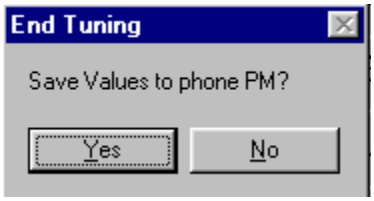


Typical values and limits in Rx Band Filter Response Compensation GSM850:

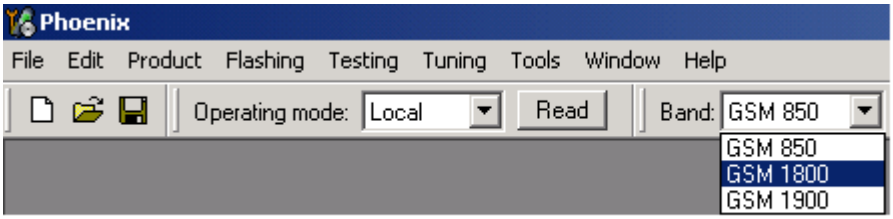
Channel	Input Frequency (MHz)	Low limit (dB)	High limit (dB)
118	863.26771	-10	3.5
128	869.26771	-3.5	3.5
140	871.66771	-3.5	3.5
172	878.06771	-3.5	3.5
190	881.66771	-3.5	3.5
217	887.06771	-3.5	3.5
241	891.86771	-3.5	3.5
251	893.86771	-3.5	3.5
261	895.86771	-10	3.5

Choose "Stop, write to PM area"

If the values shown are within limits, choose “Yes” to save values to the phone.



Continue tuning from GSM1800. Choose the correct band from the dropdown menu.



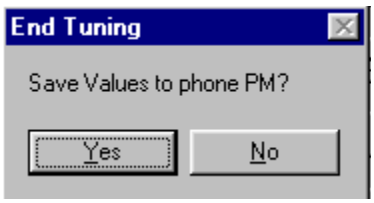
Repeat the same steps as for the GSM850 band above.

Typical values and limits in Rx Band Filter Response Compensation GSM1800:

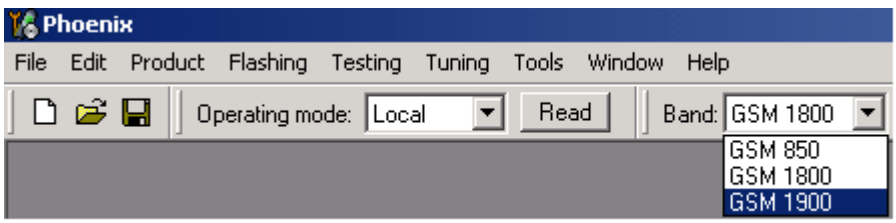
Channel	Input Frequency (MHz)	Low limit (dB)	High limit (dB)
497	1802.26771	-10	3.5
512	1805.26771	-3.5	3.5
535	1809.86771	-3.5	3.5
606	1824.06771	-3.5	3.5
700	1842.86771	-3.5	3.5
791	1861.06771	-3.5	3.5
870	1876.86771	-3.5	3.5
885	1879.86771	-3.5	3.5
908	1884.46771	-10	3.5

Choose "Stop, write to PM area"

If the values shown are within limits, choose “Yes” to save values to the phone.



Continue tuning from GSM1900. Choose the correct band from the dropdown menu.



Repeat the same steps as for the GSM850 and GSM1800 bands above.

Typical values and limits in Rx Band Filter Response Compensation GSM1900:

Channel	Input Frequency (MHz)	Low limit (dB)	High limit (dB)
496	1927.06771	-10	3.5
512	1930.26771	-3.5	3.5
537	1935.26771	-3.5	3.5
586	1945.06771	-3.5	3.5
661	1960.06771	-3.5	3.5
736	1975.06771	-3.5	3.5
794	1986.66771	-3.5	3.5
810	1989.86771	-3.5	3.5
835	1994.86771	-10	3.5

Choose "Stop, write to PM area".

If the values shown are within limits, choose “Yes” to save values to the phone.

Close the “RX Band Filter Response Compensation” – dialog to end tuning.

Rx Am Suppression

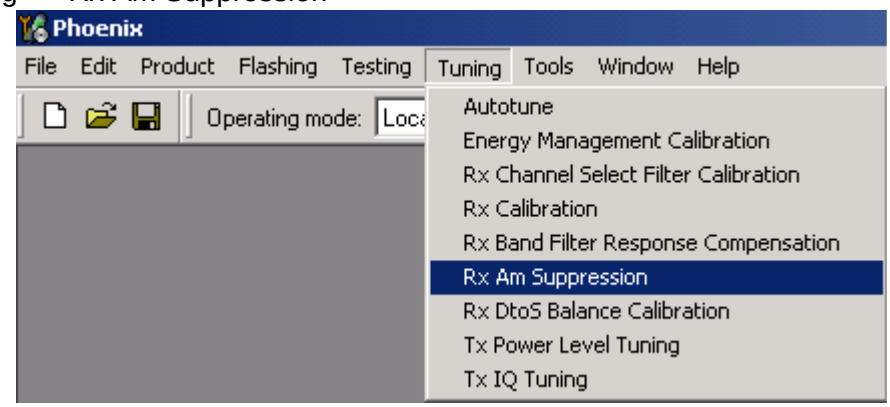
RF generator is needed.

Must be done separately on each band!

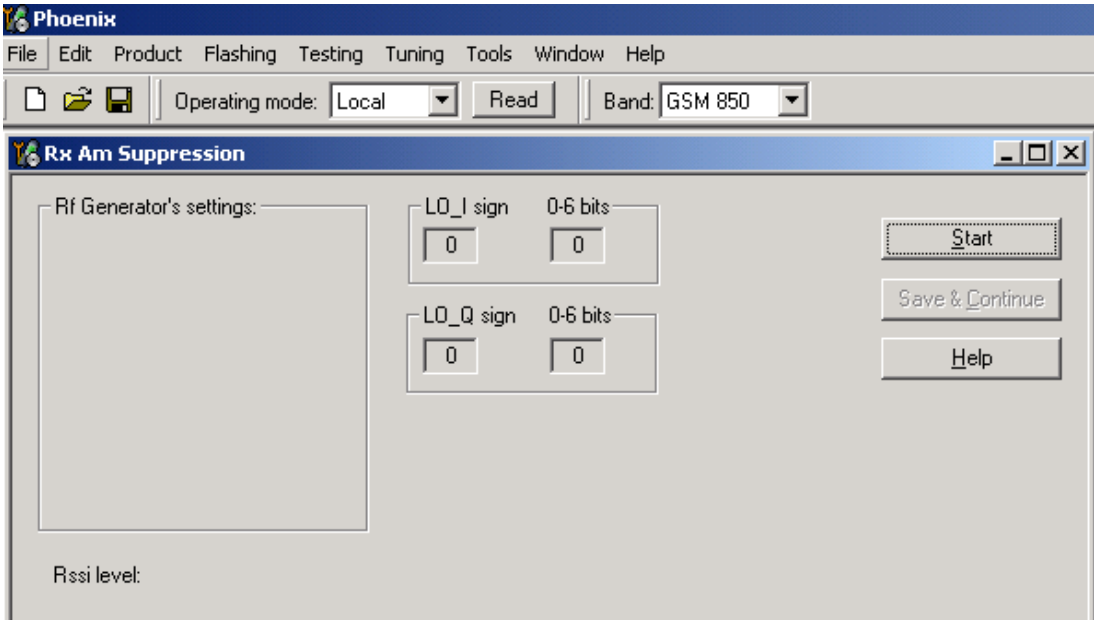
Start RX Am Suppression at GSM850, then continue at GSM1800 band and finally at the GSM1900 band.

Remember to take jig and cable attenuations into account!

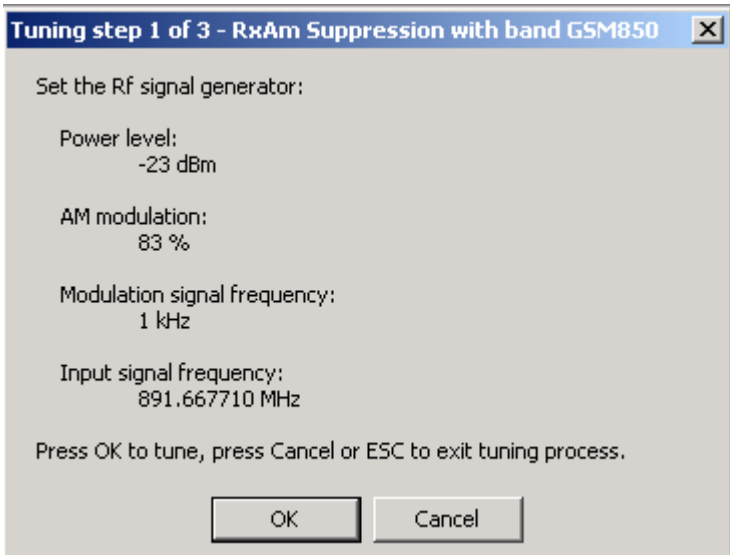
Select Tuning => Rx Am Suppression



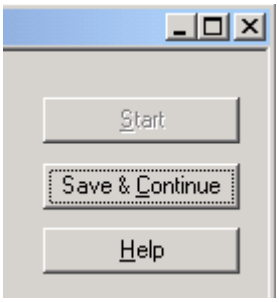
Press “Start” to begin tuning.



Adjust signal generator accordingly and press “OK” to tune.

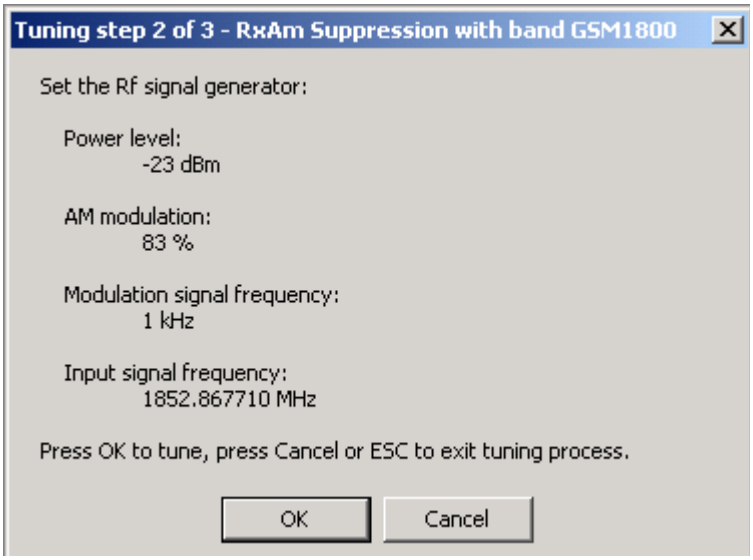


When tuning is finished, press “Save & Continue”.

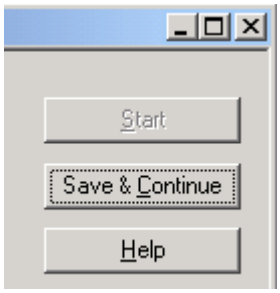


Tuning continues automatically at GSM1800 band.

Adjust signal generator accordingly and press “OK” to tune.

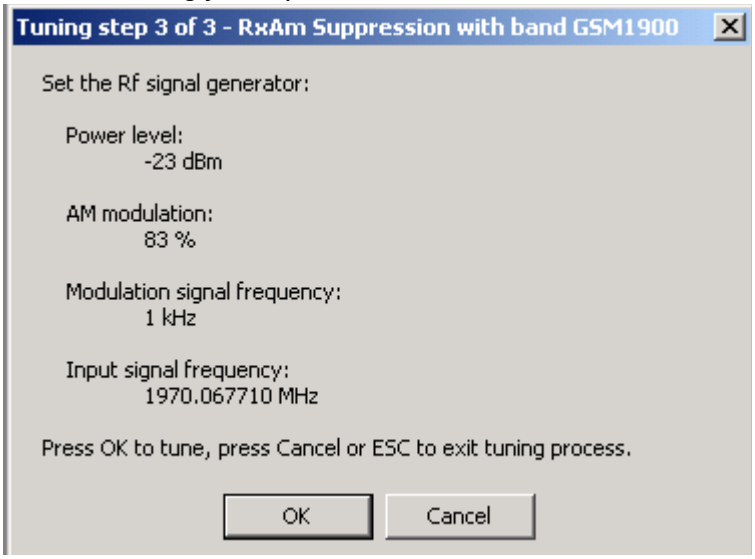


When tuning is finished, press “Save & Continue”.

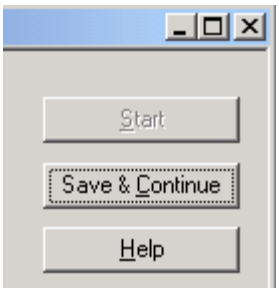


Tuning continues automatically at GSM1900 band.

Adjust signal generator accordingly and press “OK” to tune.



When tuning is finished, press “Save & Continue”.



If the Rx Am Suppression tuning was completed successfully, press “OK” to stop tuning.

Close the Rx Am Suppression window.

RX DTOS balance calibration

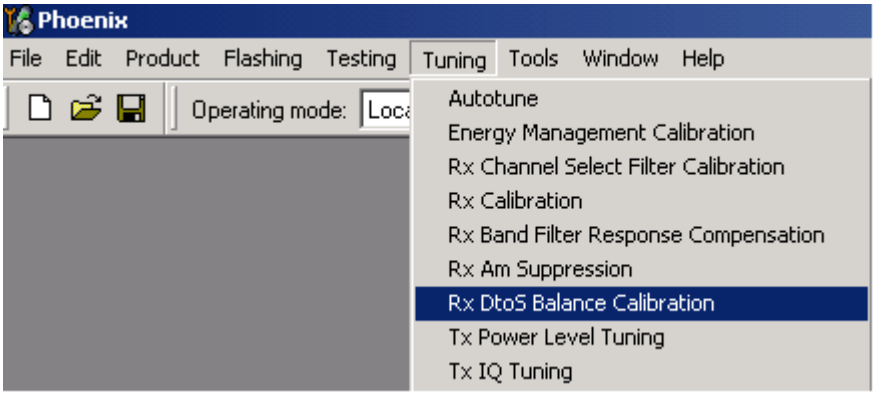
Extra equipment / external RF signal not needed

Must be done separately on each band!

Start RX Calibration for GSM850, then continue at the GSM1800 band and finally at the GSM1900 band.

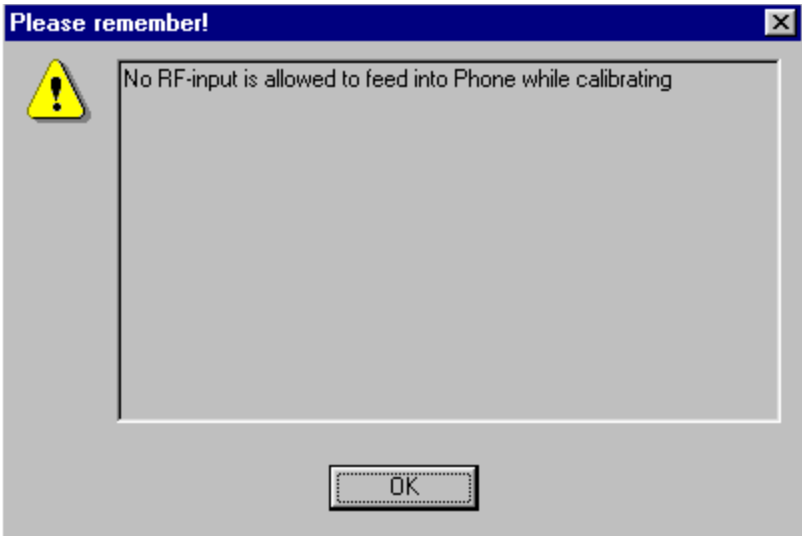
This Calibration is used for calibrating DSP control words values.

Select Tuning => Rx DtoS Balance Calibration

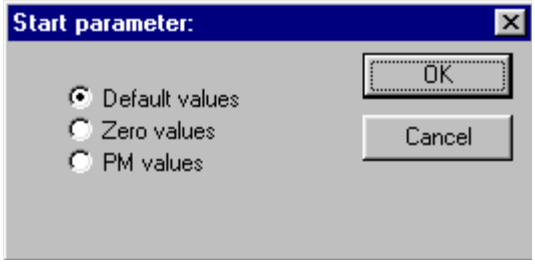


NOTE! No RF-input is allowed to feed when calibrating

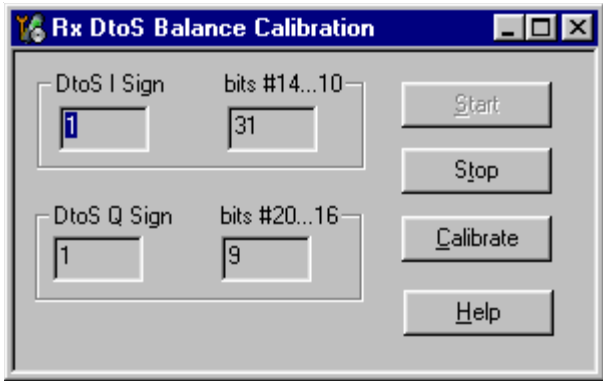
Choose “OK” and “Start”, tuning begins automatically at the GSM850 band.



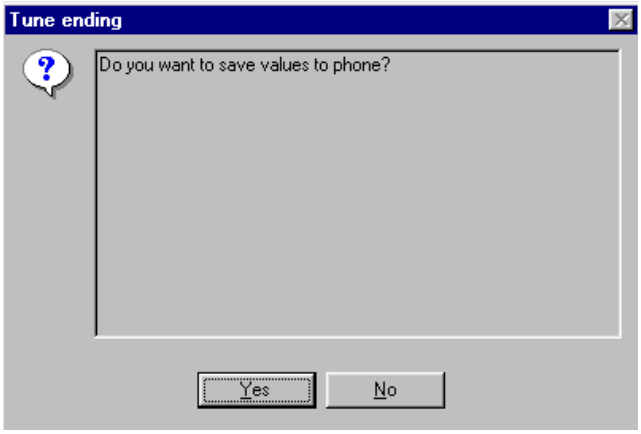
Select “OK” to start tuning with values already saved to the phone



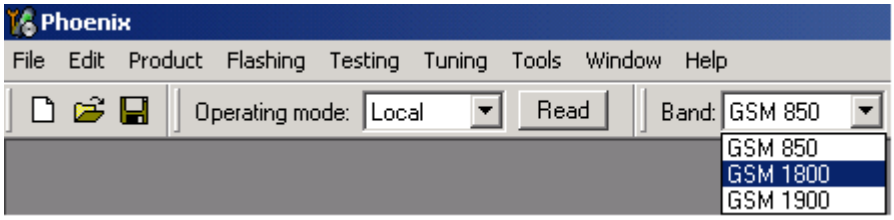
Press “Calibrate”



If values shown are within limits, Select “Stop” choose “Yes” to save values to the phone



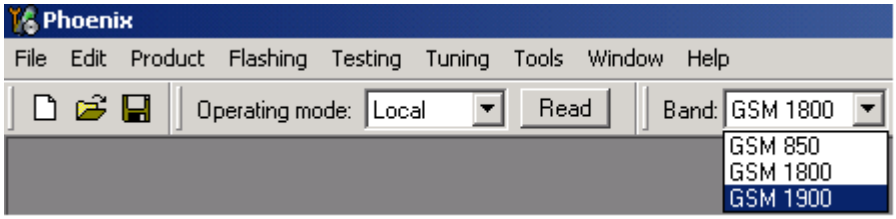
Continue tuning from GSM1800. Choose the correct band from the dropdown menu.



Repeat the same steps as for the GSM850 band.

If values shown are within limits, choose “Yes” to save values to the phone.

Continue tuning from GSM1900. Choose the correct band from the dropdown menu.



Repeat the same steps as for the GSM850 and GSM1800 bands.

If values shown are within limits, choose “Yes” to save values to the phone.

Close the RX DtoS Balance Calibration dialog to end Receiver tuning

RH-53/54 Manual Alignment with Phoenix

Manual alignment with Phoenix

The alignment/calibrations are the same in both GSM900/850 and GSM1800/1900 except for the channels and frequencies. Only the procedures for GSM900/GSM1800 are shown.

In Phoenix select connection Fbus scan product. If you power up the board before selecting Fbus, it works without any error messages. Use Jig or other device for RF and bus connection. Attenuation in the probe alone is 0dB for 900 and 0.1dB for 1800.

Use CMD55, CMU200 or other suitable device. Default channels are

37 for GSM900, 190 for GSM850

700 for GSM1800, 661 for GSM1900

The alignments and calibrations must be performed in the order shown in Phoenix to give reliable results. The way to save data to the phone and to load data from the phone is made different in the various tunings. Always look what is shown in the windows regarding these issues and act accordingly. In some windows the saving is done without any warning or second approval as soon as you stop or end. To vary a selected parameter you can use + and – key or in some cases directly type the new value. + and – steps the value for every press. Repeat function seems not to work. In I/Q you can use the side arrows.

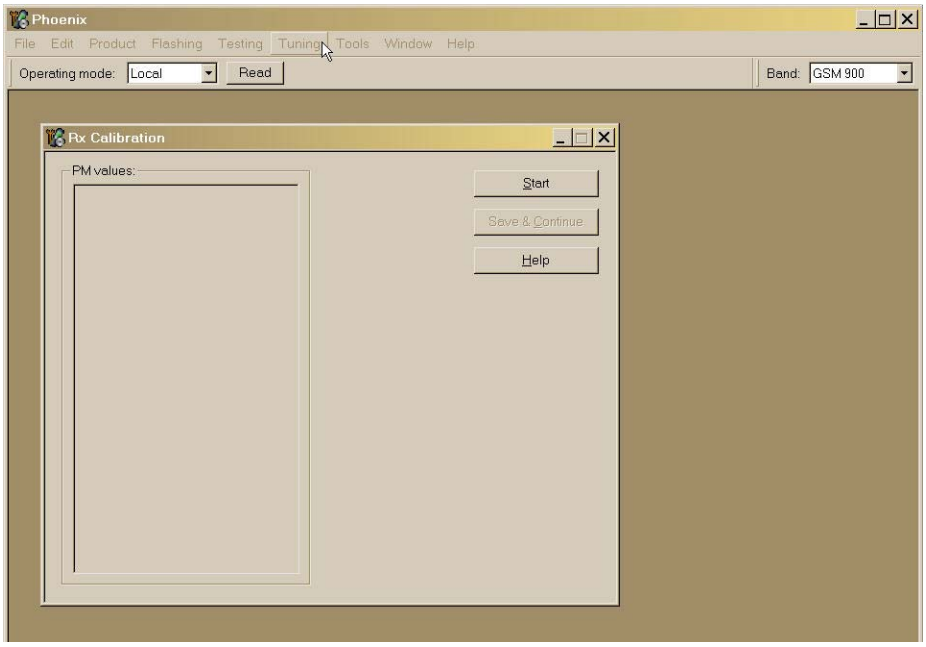
Only the GSM900/1800 tuning is shown. In GSM850 and 1900 the procedure is the same except for other channel numbers/frequencies.

RX calibration

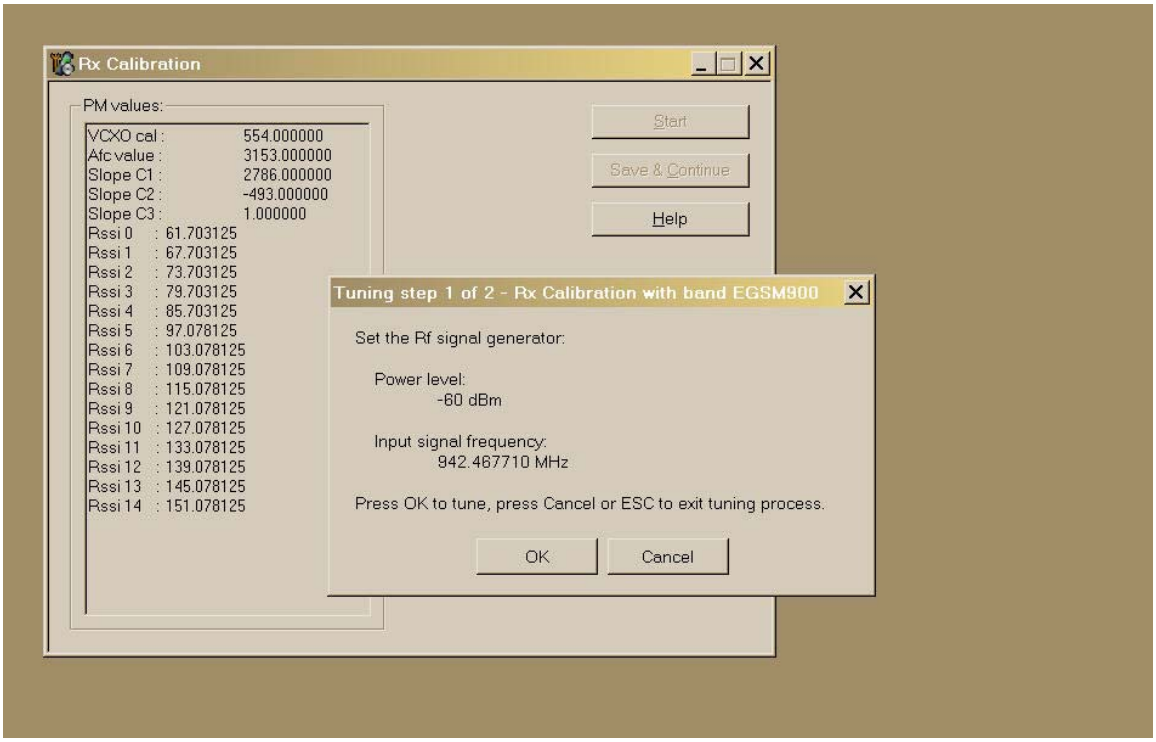
Select Tuning, RX Calibration

Select Band GSM900

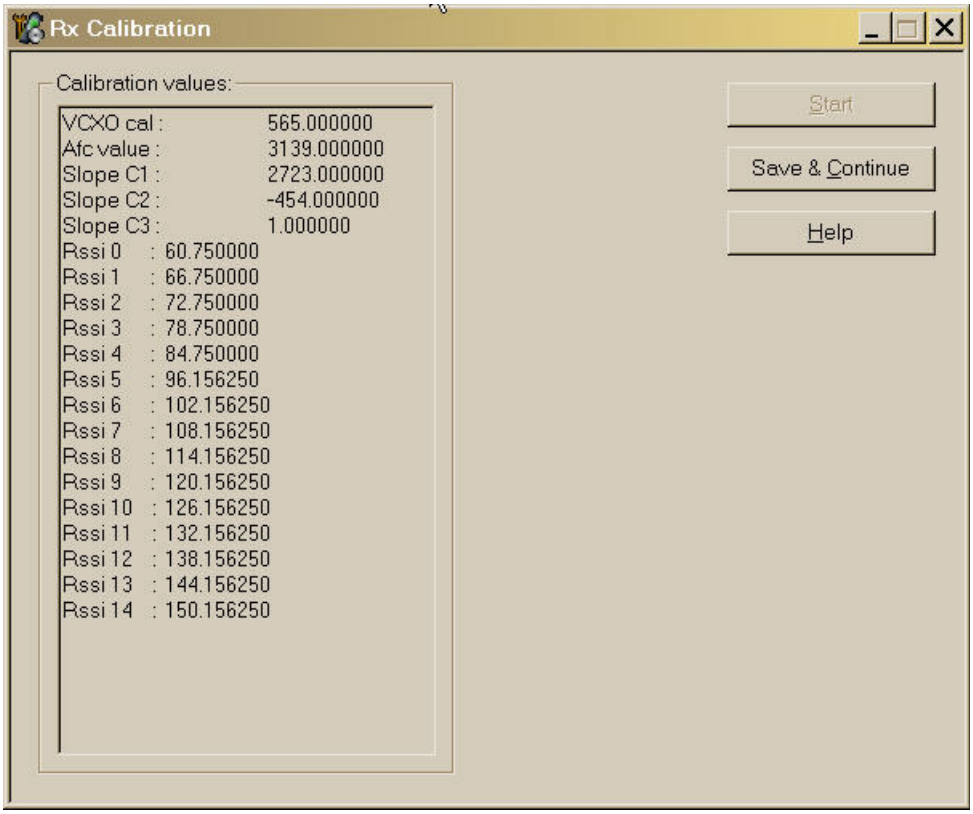
Press start



Follow the description in Phoenix, setting up the signal generator as described

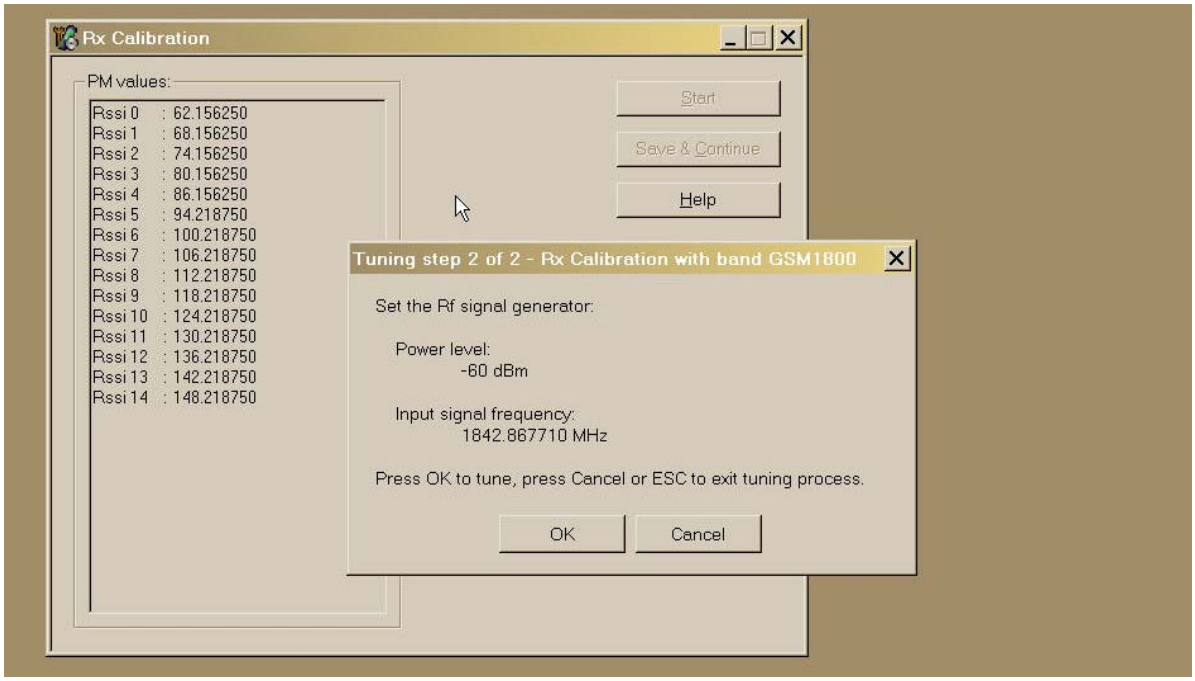


Press the OK button

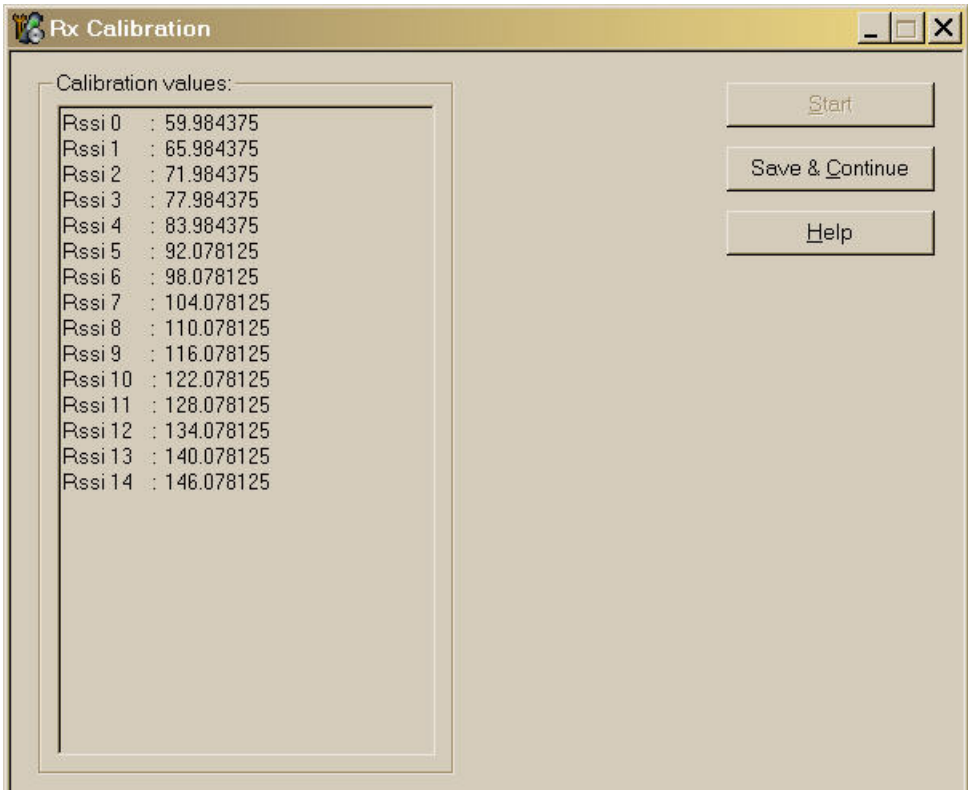


Press the Save&Continue button.

Follow the description in Phoenix, setting up the signal generator as described



Press the OK button



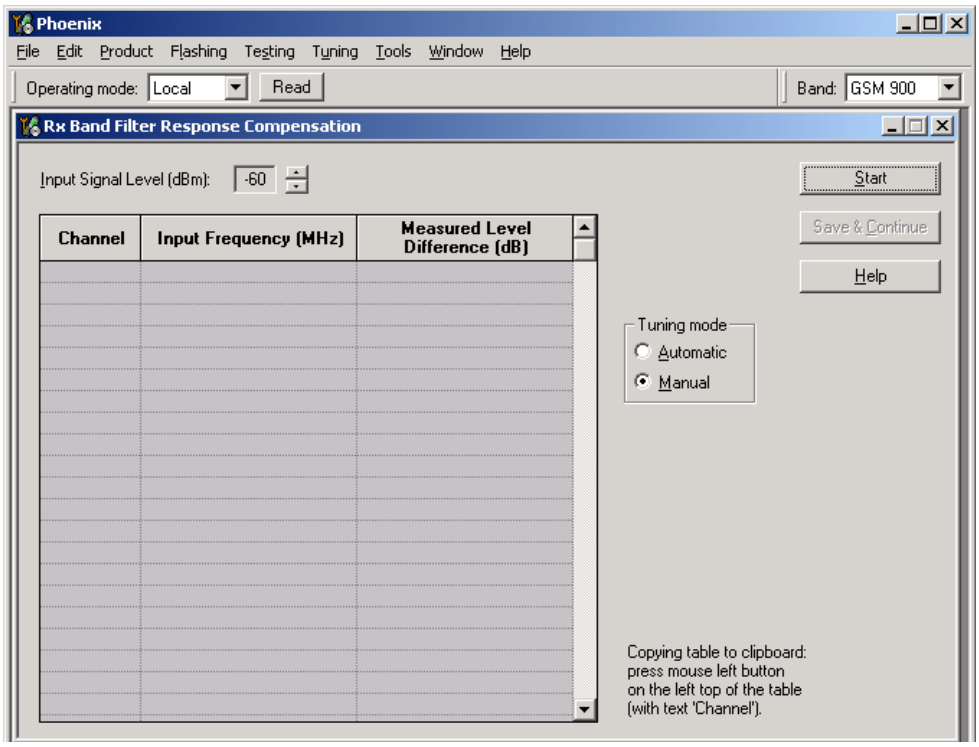
Press the Save&Continue button

Remarks. You have to follow the shown procedure. It is not possible to tune the high band alone. You need to make a tuning of the low band first to come to the high band. You can stop at any time by switching off the menu. If the values are outside internal specs, you can not save them and have to leave the tuning without saving.

RX Band Filter Response

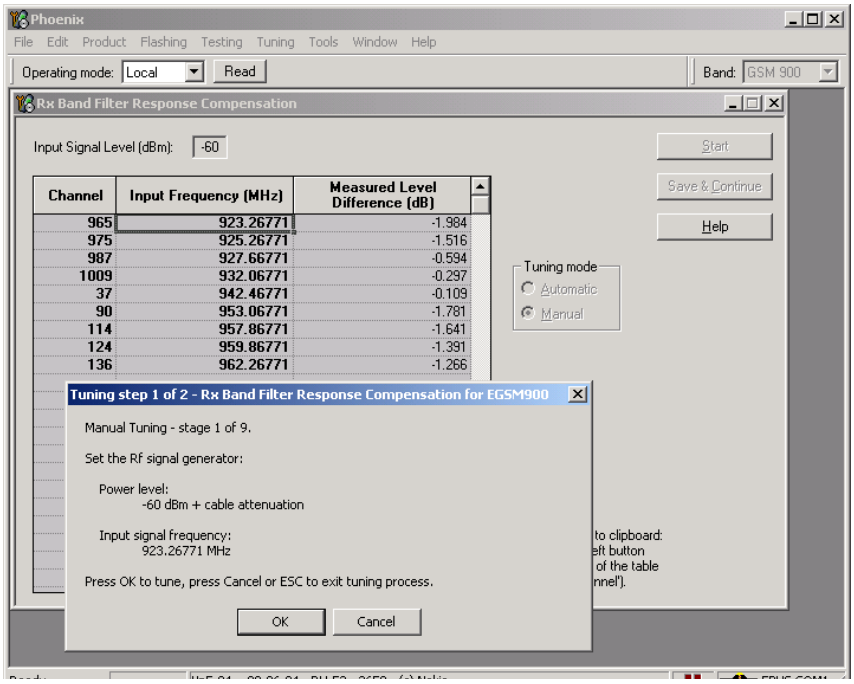
RX Band Filter Response Compensation

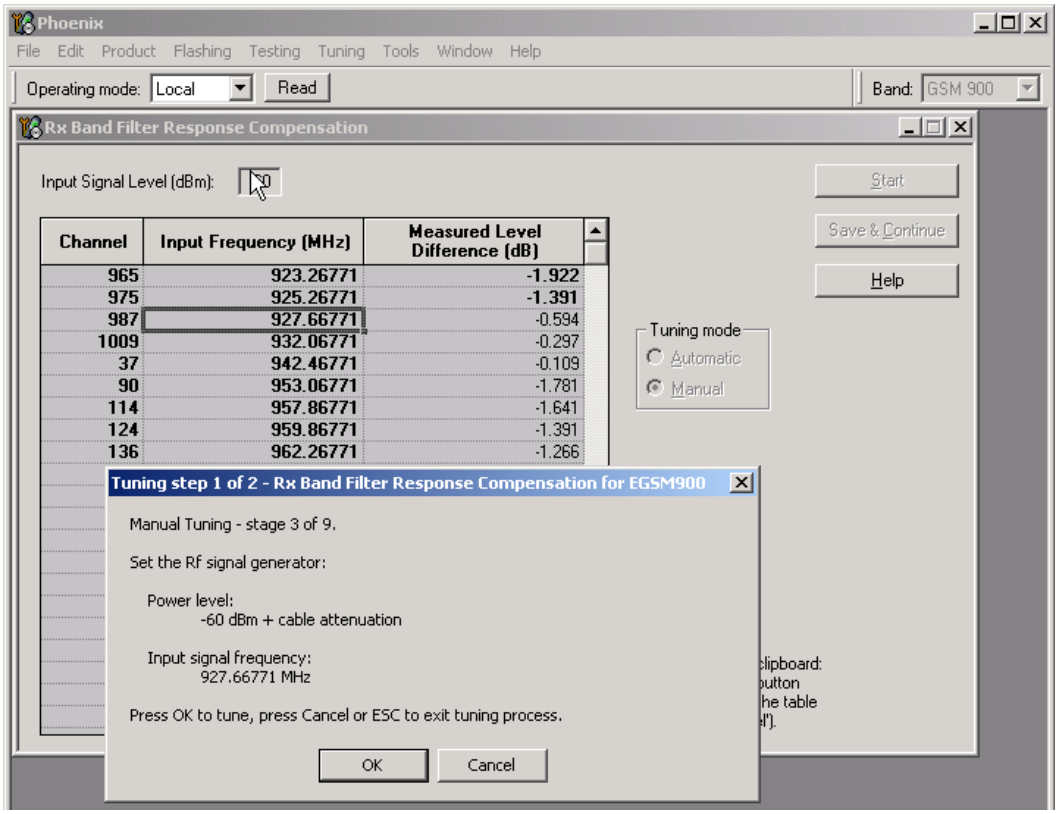
This tuning measures the band filters ripple over the bands and the information is used to compensate the RX level reporting.

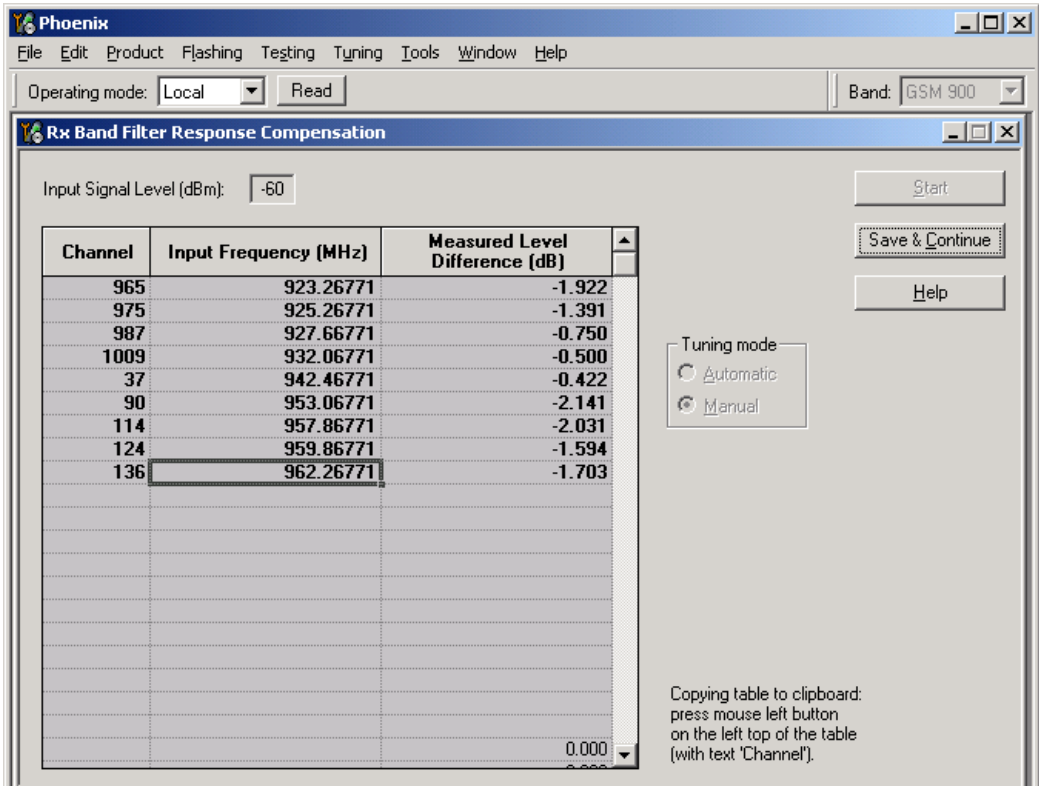


Select manual tuning and press Start.

You will now be guided through the 9 steps. Each step asks you to set the generator to a certain frequency and when you press OK, the next step comes up. After every step the value found is shown in bold.

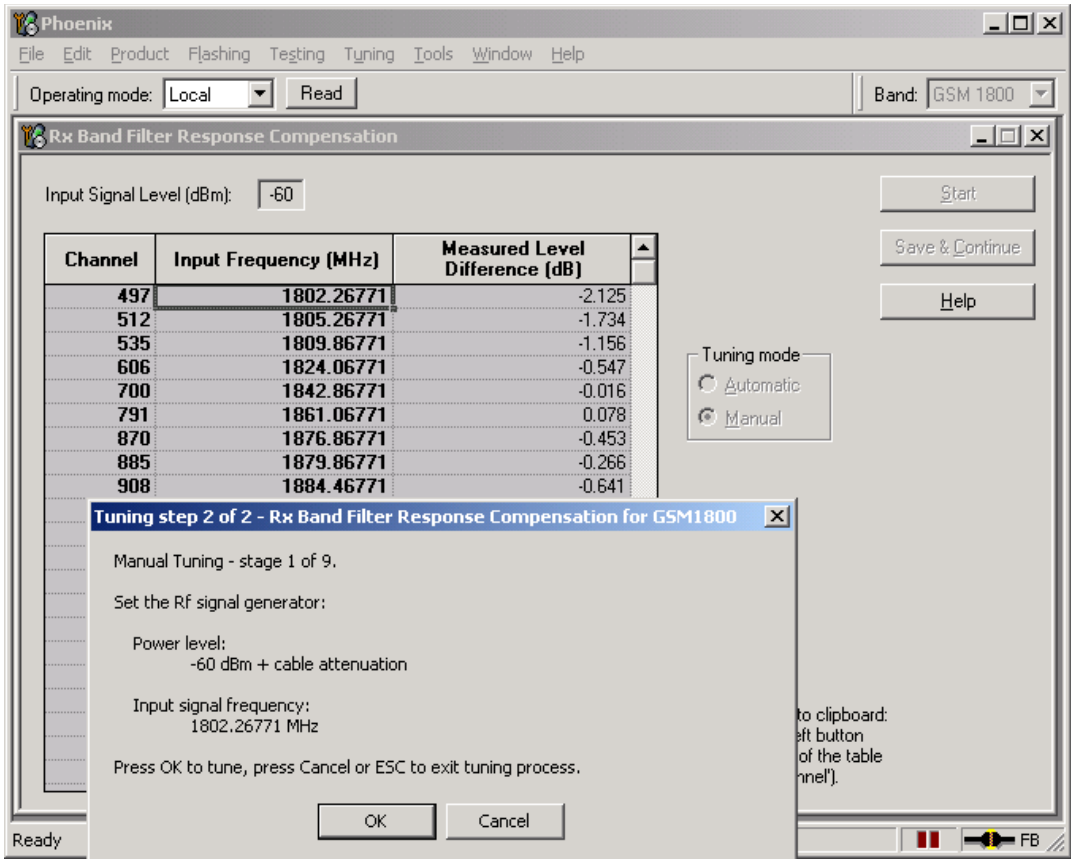


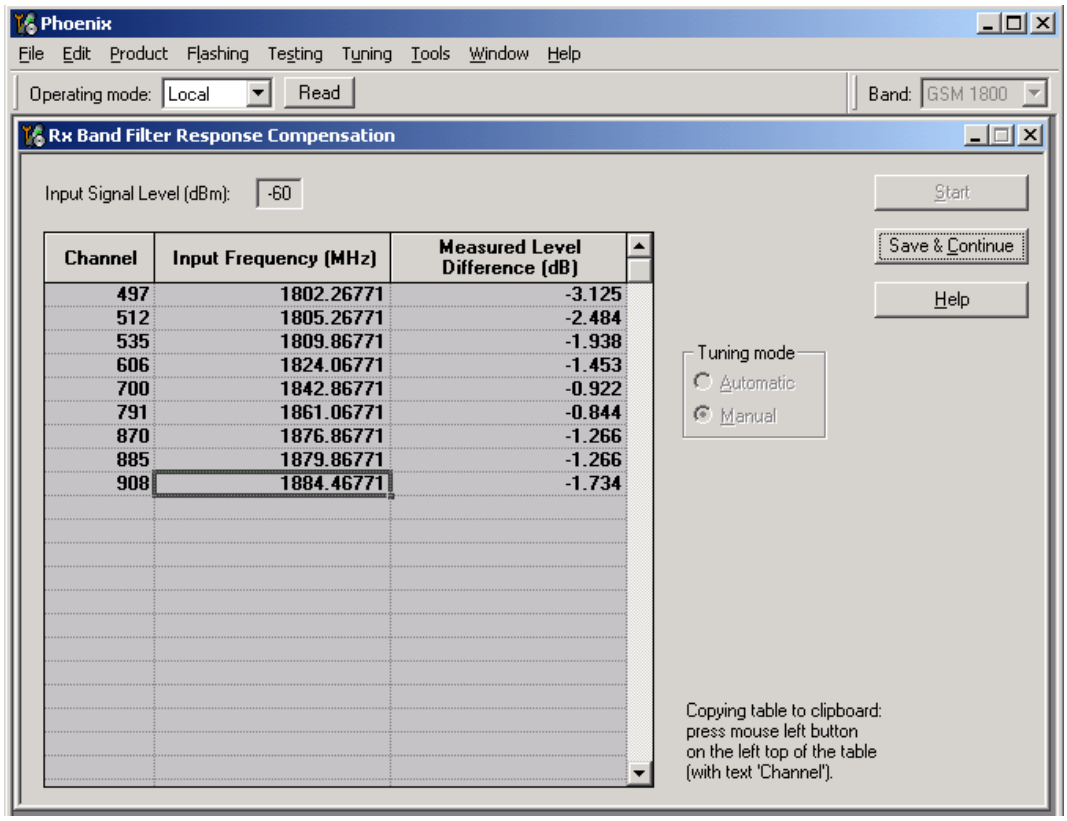




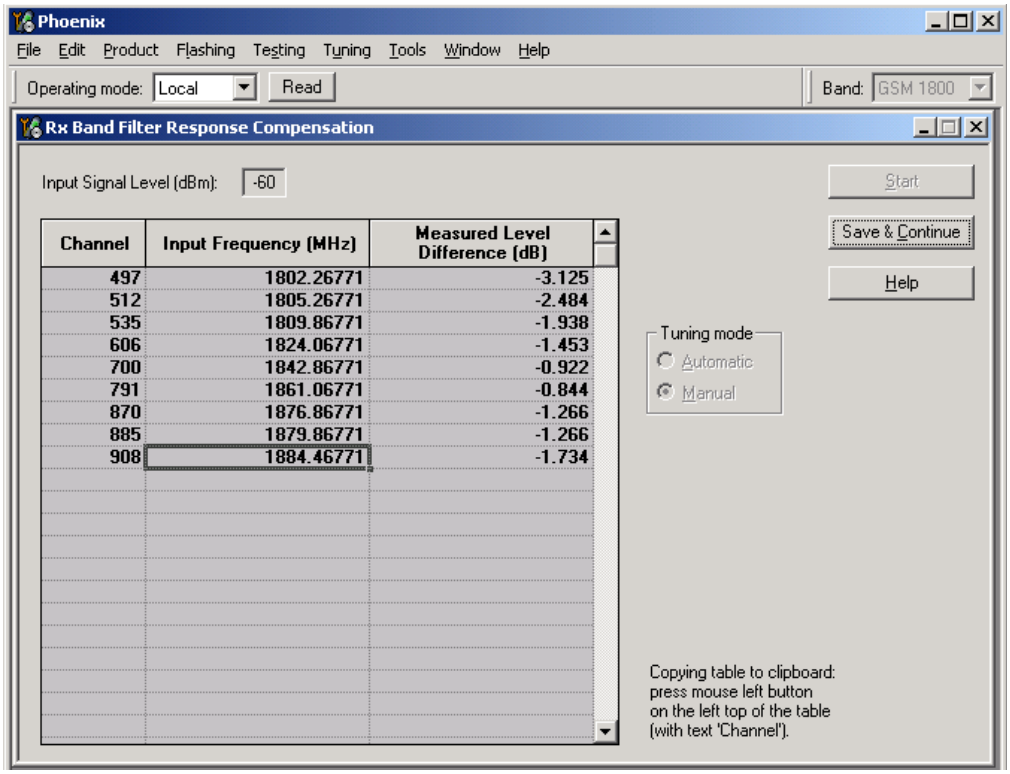
When all channels have been tuned you must press Save&Continue. It then continues with the high band.

The high band tuning goes on like the low band. Every step leads to the next untill all channels have been tuned.





Press Save&Continue to finish the tuning and saving all the results.

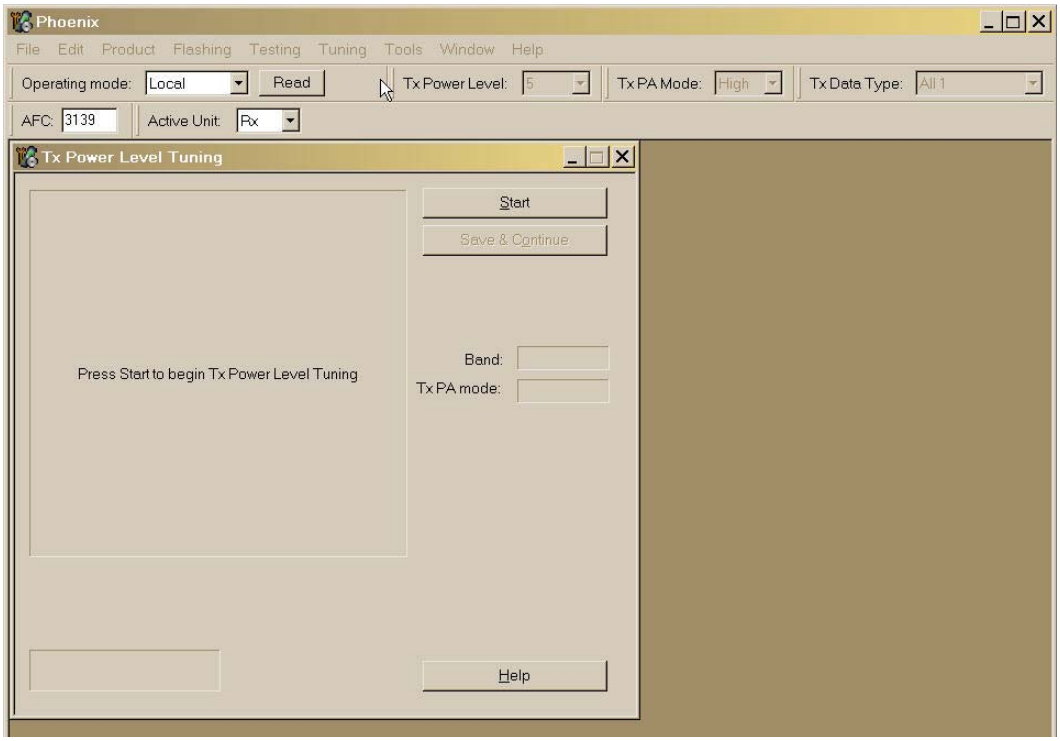


RX Channel Select Filter (Base Band filter)

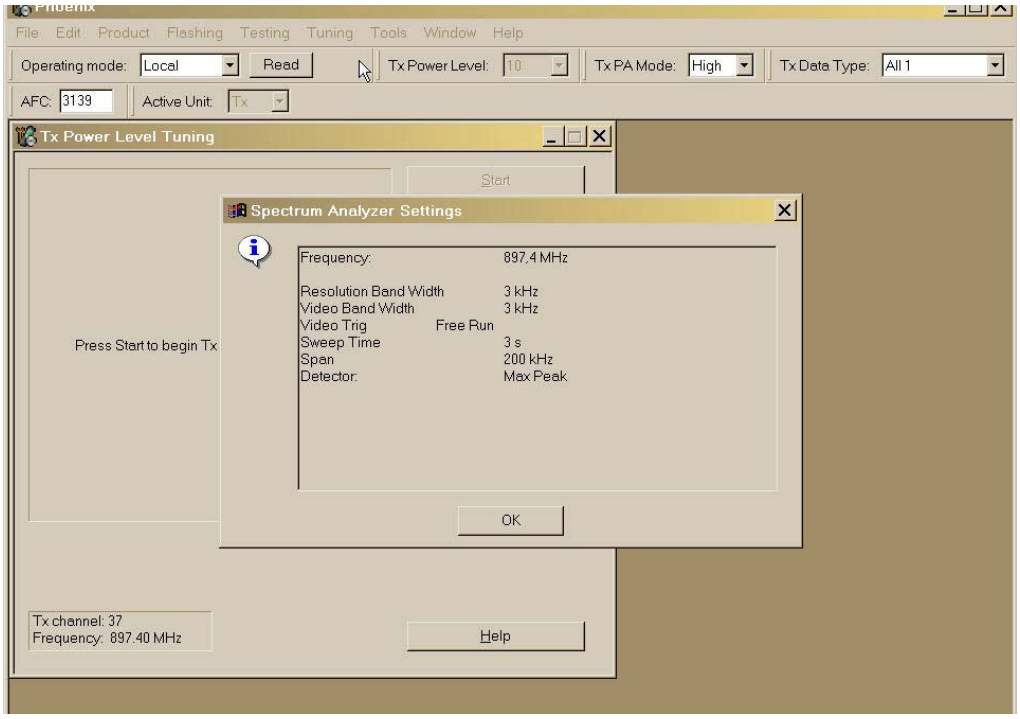
The tuning is made internally in the phone by itself. It is the low pass filters in Mjoelner that is calibrated/tuned. Only result is OK or Not OK.

Tx Power tuning

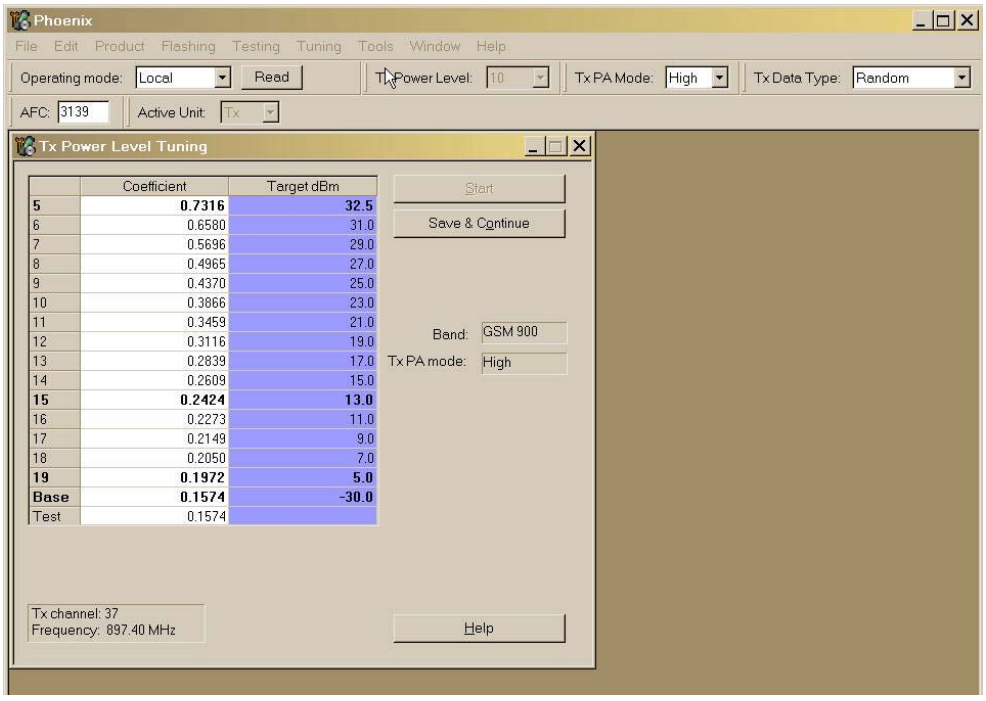
Select Tuning, Tx Power Level Tuning



Press start and follow the instructions on the pop-up window



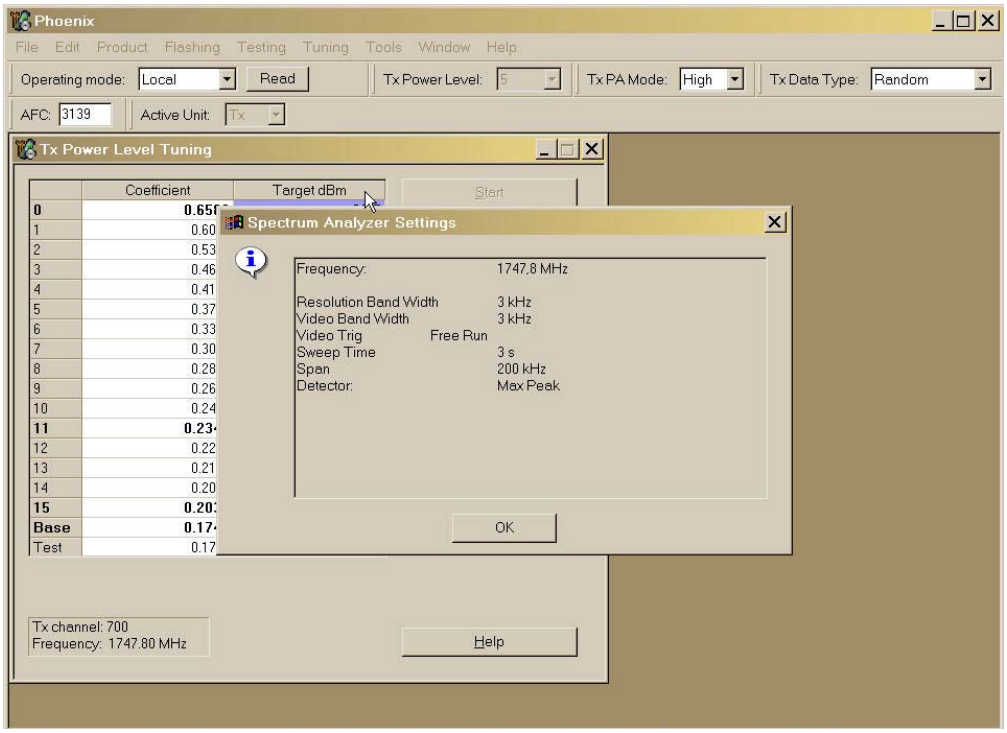
Set the spectrum analyzer or GSM tester for the required settings and press “OK” If a GSM tester is used set the TX data type to random, so that the tester can trig on the signal.



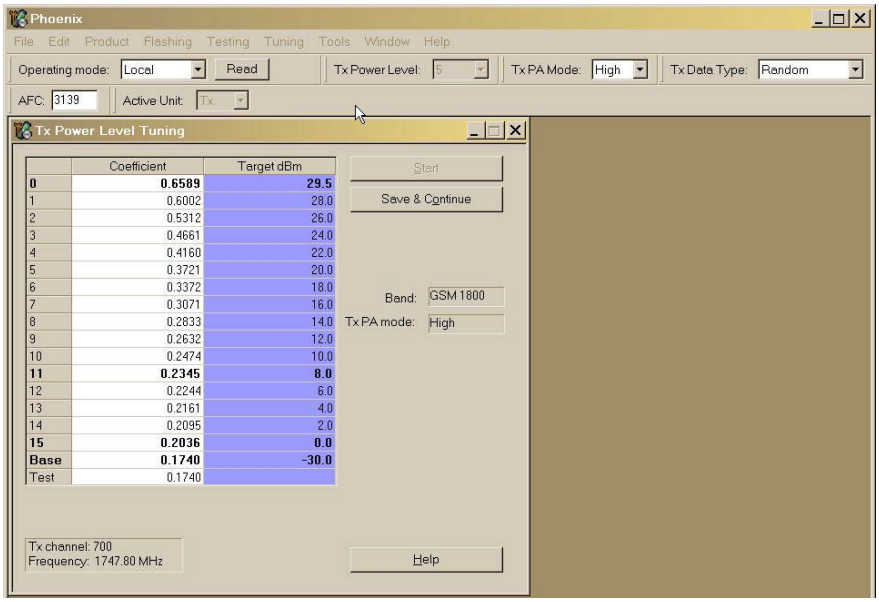
Tune the highlighted values to the wanted power (Use average burst power)

Tune the base level to –25dBm

When done press Save&Continue and Phoenix will automatically shift from low band to high band. At the same time the intermediate values are calculated, but that is first seen next time you start a tuning.



Set the spectrum analyzer or GSM tester for the required settings and press “OK” . If a GSM tester is used set the TX data type to random, so that the tester can trig on the signal.



Tune the highlighted values to the wanted power (Use average burst power)

Tune the base level to –25dBm

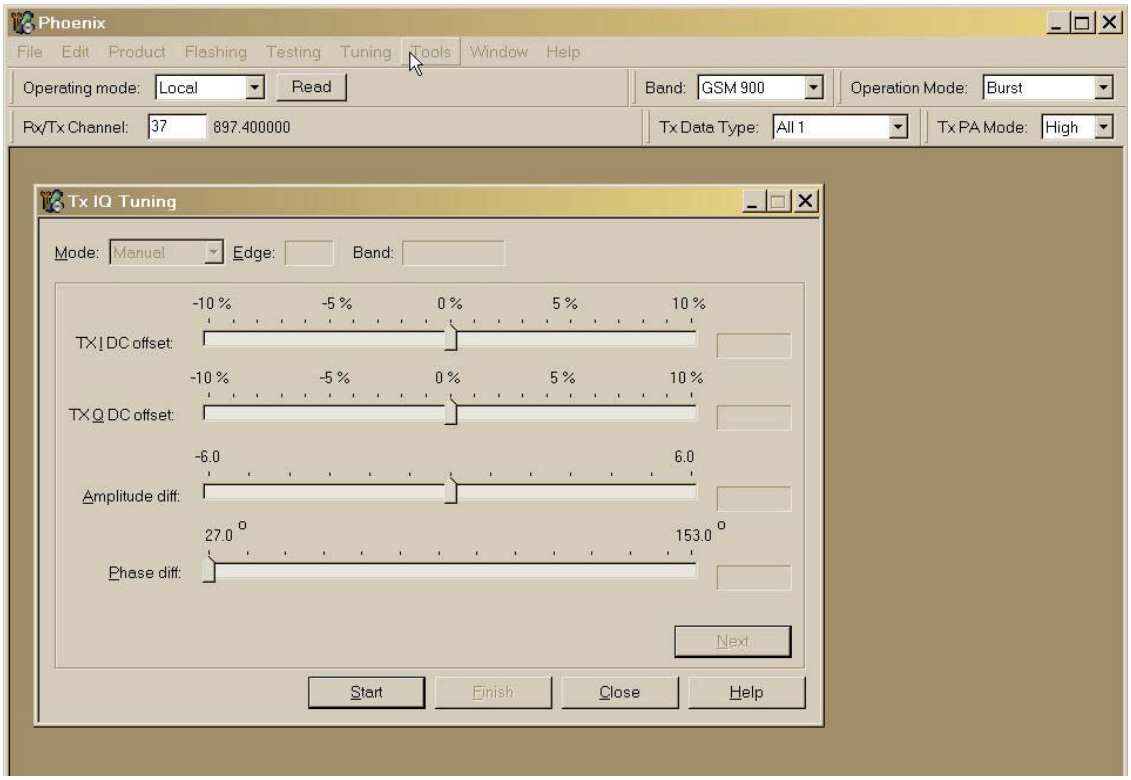
When done press Save&Continue. The intermediate results will then be calculated.

The procedure have to be followed. First low band tuning and then high band tuning, but it is off cause not needed to change anything.

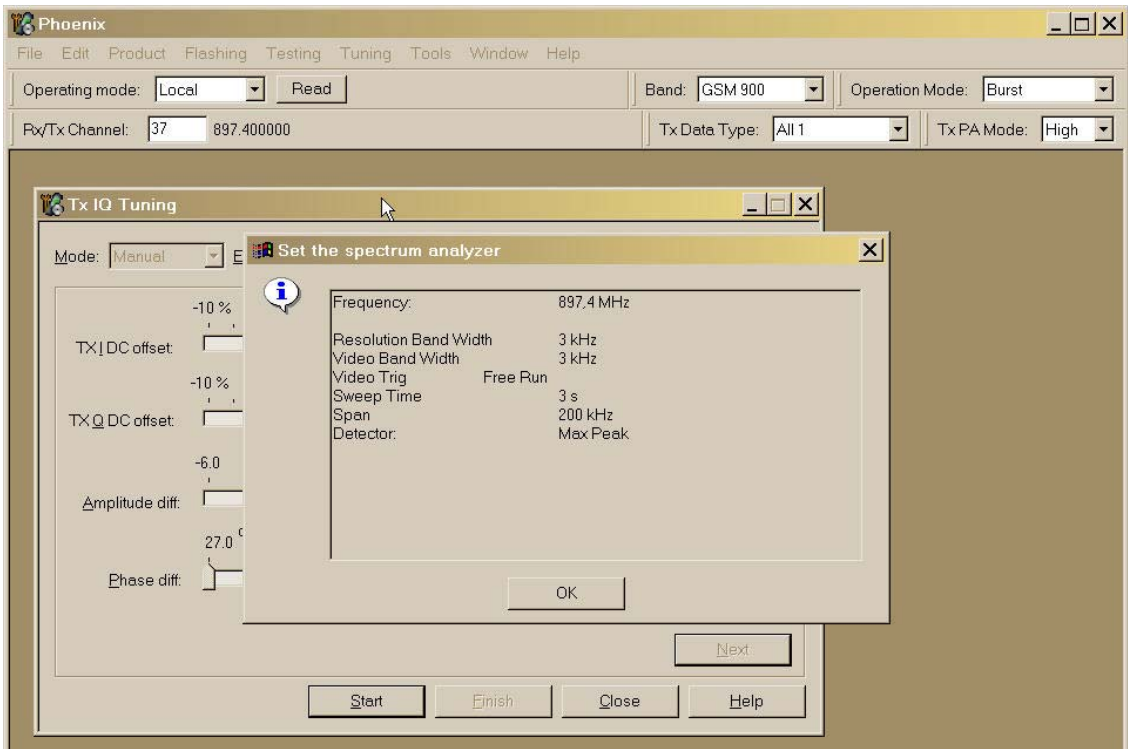
I/Q tuning

Select Tuning, Tx IQ tuning, TX Data Type “random” for a GSM tester like CMU200 or 1/0 for SPA measuring.

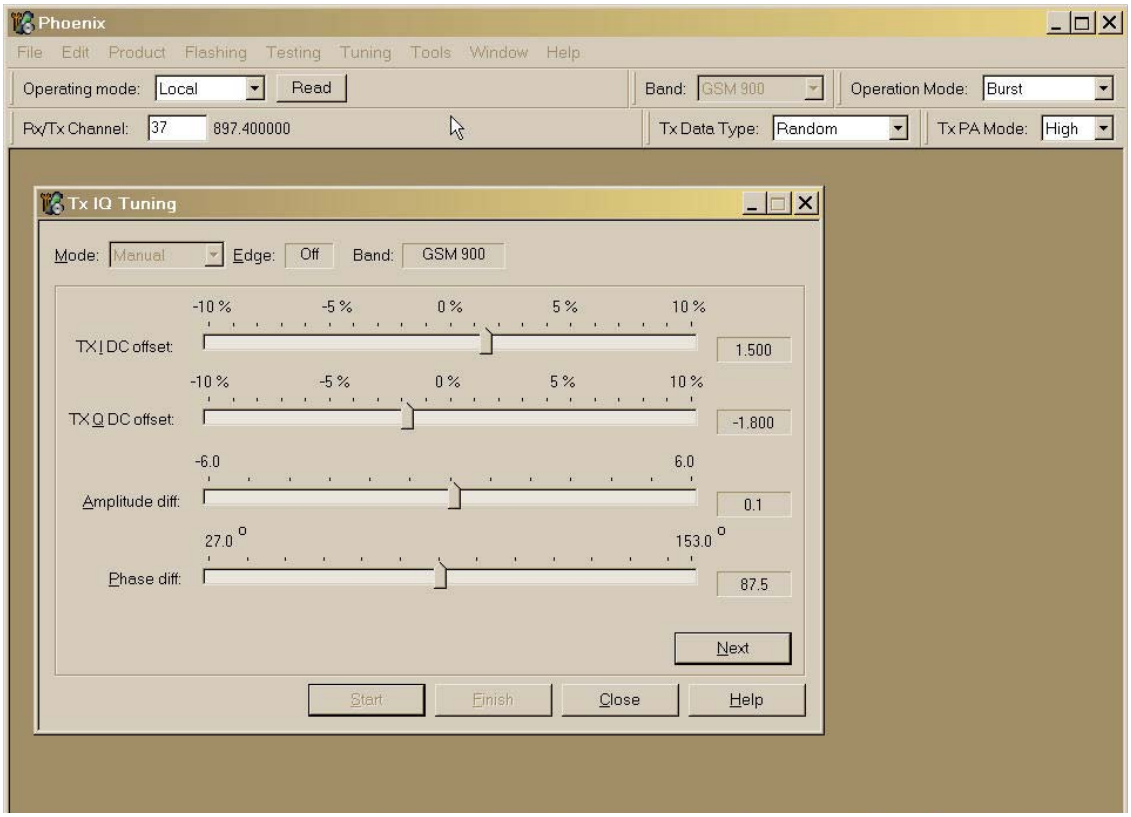
CMD55 shows the same as a spectrum analyzer when I/Q tuning is selected. CMU200 shows the carrier and sideband suppression directly as figures in the modulation mode.



Press Start



Set the spectrum analyzer or GSM tester for the required settings and press “OK”

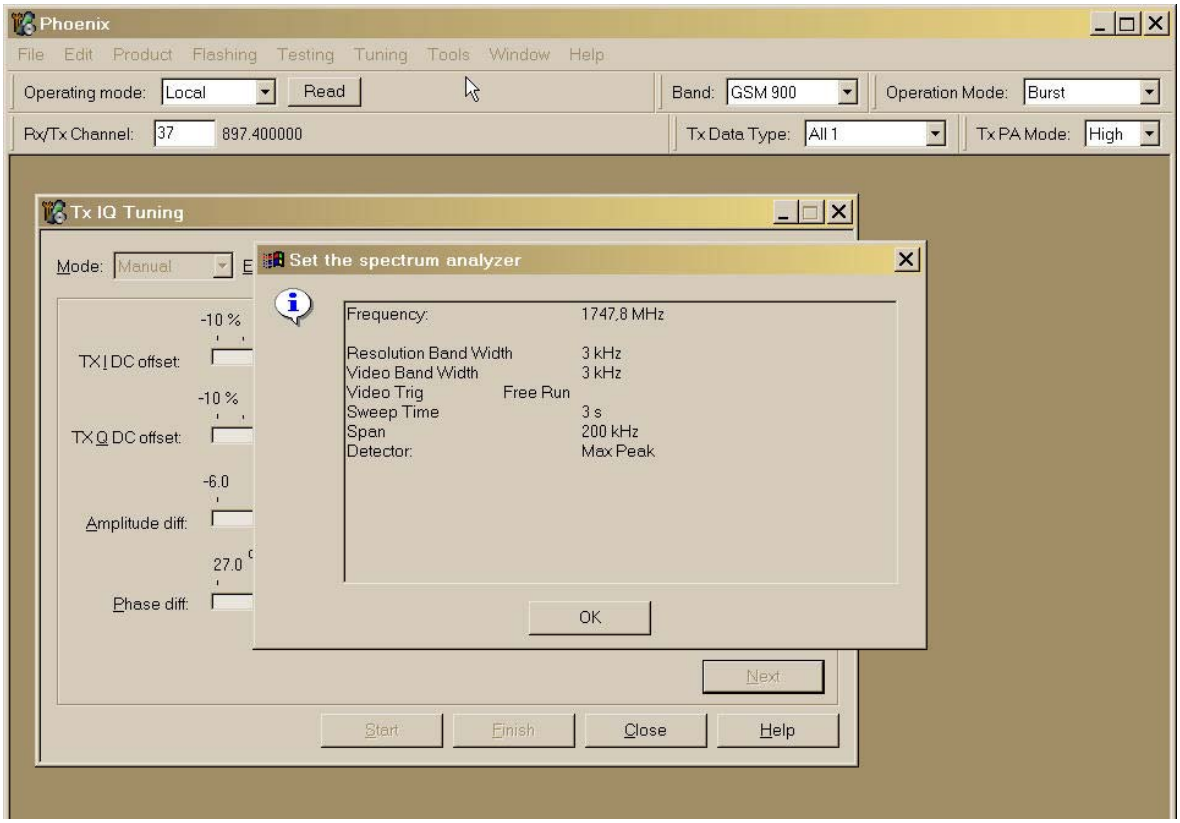


Begin tuning with data from selected place.

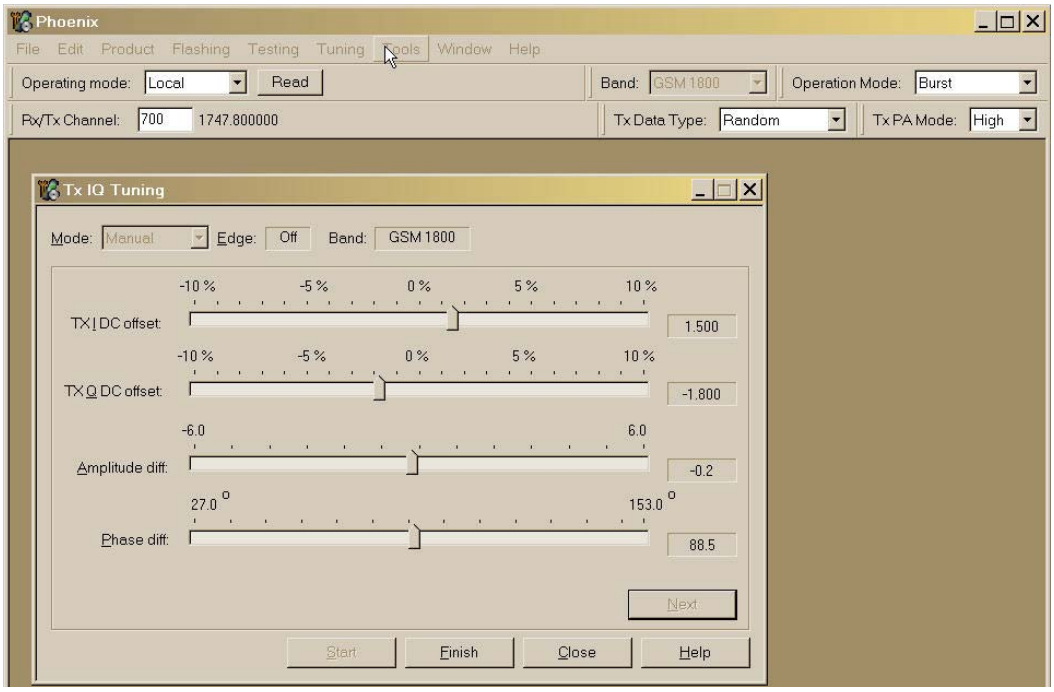
Tune DC offset values to lowest carrier. Use Side arrows or +, - .

Tune Amplitude and phase to lowest sideband.

When satisfied with the result, press Next. (The sidebands should hardly be visible). Or for CMU200 the supression should be better than –40dBc.



Set the spectrum analyzer or GSM tester for the required settings and press “OK”



Press Start to begin tuning with data from selected place.

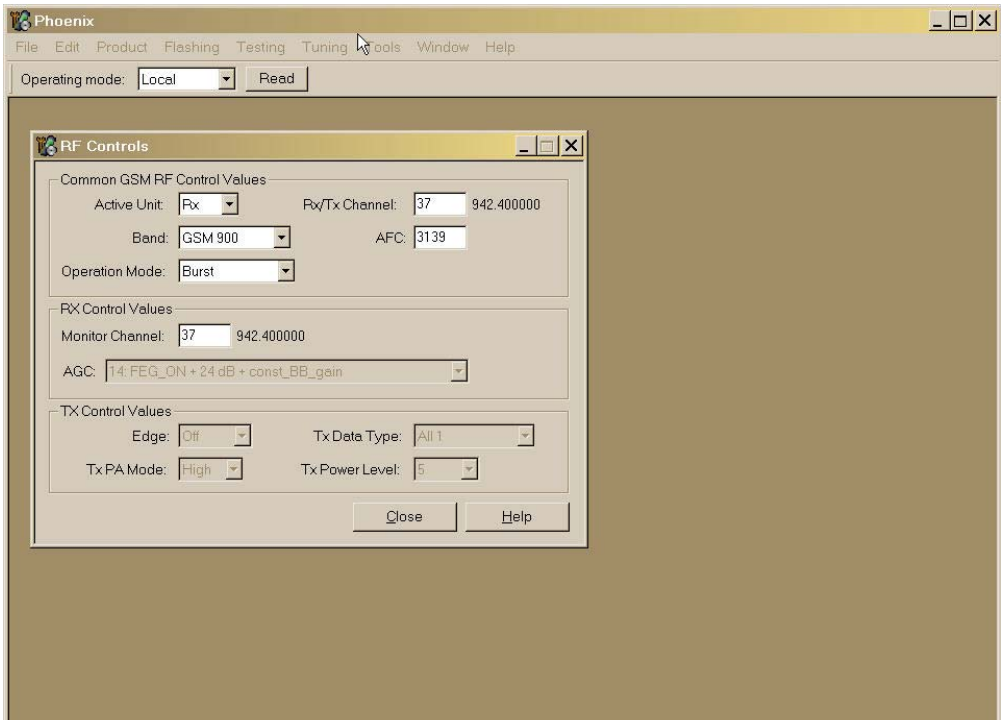
Tune DC offset values to lowest carrier. Use Side arrows or +, - .

Tune Amplitude and phase to lowest sideband.

When satisfied with the result, press Finish. (The sidebands should hardly be visible). Or for CMU200 the supression should be better than –40dBc.

RF control

The purpose is to check the receiver or transmitter without going in call. It works very much like a call, but you have control via the PC, and not via the tester. If you want to tune or calibrate at other channels or levels than the default for that function, you can activate RF control at the same time and change the wanted parameters.



If you want to tune at other channels than the default, then you must select it first in RF control and then start the tuning.

Flashing Setup Instructions

FPS-8 flash concept

Figure 5:FPS-8 flash concept

Table 7:

Item	Type	Description	Code
1	SF-33	Point Of sales flash loading adapter	0770857
2	FLC-2	Power cable	0730185
3	XCS-4	Modular cable	0730178
4	FPS-8	Flash prommer box sales pack	0080321
5	AXP-8, included in FPS-8 sales pack	FLS-4S sales package US	0080543
6	AXS-4, included in FPS-8 sales pack	D9-D9 cable	0730090
7	0730090	Software protection key	0750018

Item	Type	Description	Code
8	ACF-8, included in FPS-8 sales pack	AC charger	0680032
9	SF-12	SRAM module (3pcs needed inside FPS-8	0080346 (one SRAM /code

POS (Point of Sale) flash concept

Figure 6:POS flash

Table 8:

Item	Type	Description	Code
1	SF-33	Point Of sales flash loading adapter	0770857
2	XCS-1	Service cable	0730218
3	FLS-4S	FLS-4S sales package EMEA	0080541
4	FLS-4S	FLS-4S sales package APAC	0080542
5	FLS-4S	FLS-4S sales package US	0080543

POS flashing can also be used with USB connection. (USB cable can be purchased from shops or suppliers providing PC hardware and accessories).

Module Jig flash concept

Figure 7:Module jig concept

Flashing with MJ-36 is recommended in local mode. The following equipment is needed for RH -53/54 Care (AMS) SW ypdate when the system is placed in the module jig MJ-36 and connected through an FPS-8 set-up.

Item	Type	Description	Code
1	MJ-36	Module jig	0770856
2	PCS-1	Power cable	0730012
3	XCS-1	Modular cable	0730178
4	FPS-8	Flash prommer box sales pack	0080321
5	AXP-8, included in FPS-8 sales pack	Printer cable	
6	AXS-4	D9-D9 cable	0730090
7	PKD-1	Software protection key	0750018
8	ACF-8, included in FPS-8 sales pack	AC charger	0680032
9	SF-12	SRAM module (3pcs needed inside FPS-8)	0080346 (one SRAM /code

Note! More than 32MB SRAM may be required in FPS-8

This concept can also be used for troubleshooting and RF calibration.

- MJ-36 is intended for use with an external power supply.
- MJ-36 input voltage : normal +6V, maximum +12V
- Ensure that the jumper is set open for voltage regulation before the external power supply is connected.
- When FPS-8 is used as the power supply (4V), the jumper should be set close to bypass regulator.
- EM calibrations including Zocus are only done with JBV-1. Module jig MJ-36 does not support Zocus calibration for RH-53/54

Table 9:

 Without shielding can I208 (MJ-36 insert is needed).	 With shielding can (the insert can be placed in the compartment).

JBV-1 flash concept

Figure 8:JBV- flash/service concept

Table 10:

Item:	Type:	Description	Product code:
1	JBV-1	Docking station	0770298
2	DA-27	Docking station adapter	0780352
3	XCS-4	Modular cable	0730178
4	PCS-1	DC power cable	0730012
5	DAU-9S	Service FBUS cable	0730108
6	AXP-8, included in FPS-8 slaes pack	Printer cable	
7	AXS-4, included in FPS-8 slaes pack	D9-D9 cable,	0730090
8	PKD-1	Software protection key	0750018
9	SF-12	SRAM module (3pcs needed inside FPS-8)	0080346 (one SRAM /code

Note! More than 32MB SRAM may be required in FPS-8

This concept can be used for BB and Rf calibration as well. EM calibration including Zocus should be carried out with JBV-1 and DA-27.