3 - Service Software Instructions

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Quick Guide for Phoenix Service SW Installation

Service requirements

Supported operating systems

- Windows 2000 (service pack 2)
- Windows XP (service pack 1)

Hardware requirements

Minimum

- Processor 300 MHz, RAM memory 64 MB, disk 100 MB.

Recommended for Windows 2000

- Processor 700 MHz, RAM memory 256 MB, disk space 150 MB.

Service software

The service software used is called Phoenix. The Phoenix service software requires a 32-bit operating system and is not compatible with Windows versions 3.X.

Phoenix installation steps in brief

DCT-4 generation test and service software is called “Phoenix”.

These are the basic steps to install Phoenix:

- Connect a DK2 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 for use also with FPS-8 flash prommer and other tools.

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 product specific data:

- Product software binary files
- Files for type label printing
- Validation file for the fault log repair data reporting system
- All product specific configuration files for Phoenix software components

Phoenix service SW and phone data packages should only be used as complete installation packages. Uninstallation should be made from Windows’s control panel.

Phoenix Service SW

Before installation

- Check that a dongle is attached to the parallel port of your computer.
- Download the installation package (e.g. *phoenix_service_sw_a15_2004_41_5_28.exe*) to your computer (e.g. C:\TEMP).
- Close all other programs.
- Run the application file (e.g. *phoenix_service_sw_a15_2004_41_5_28.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 cannot continue."

  Possible reasons may be a defective or too old PKD-1 dongle (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.

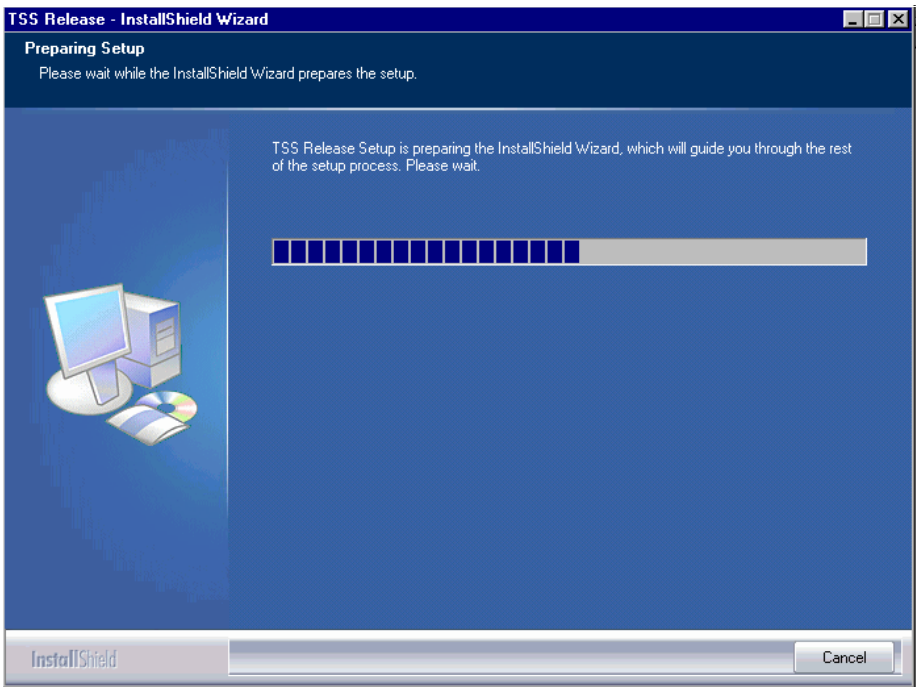
  First, check the COM /parallel ports used! After correcting the problem, installation can be restarted.

For more detailed information, please refer to Phoenix Help files. Each feature in Phoenix has its own Help function, which can be activated while running the program. Press the F1 key or the feature's Help button to activate a Help file.

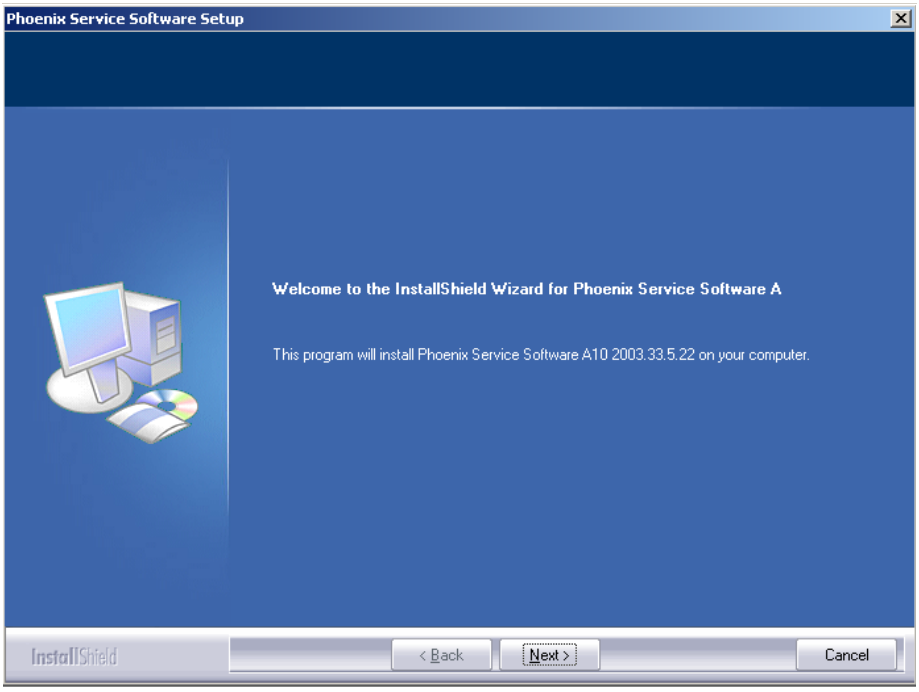
Installing Phoenix

1. To start installation, run the *phoenix_service_sw_a15_2004_41_5_28.exe*.

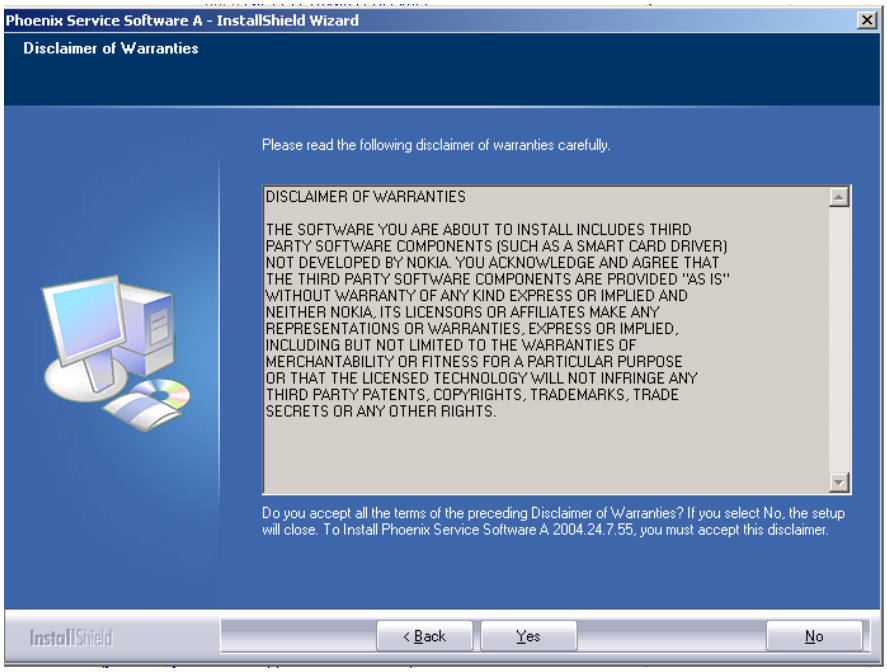
Install Shield starts.



2. To continue, click "Next" in the Welcome dialog.

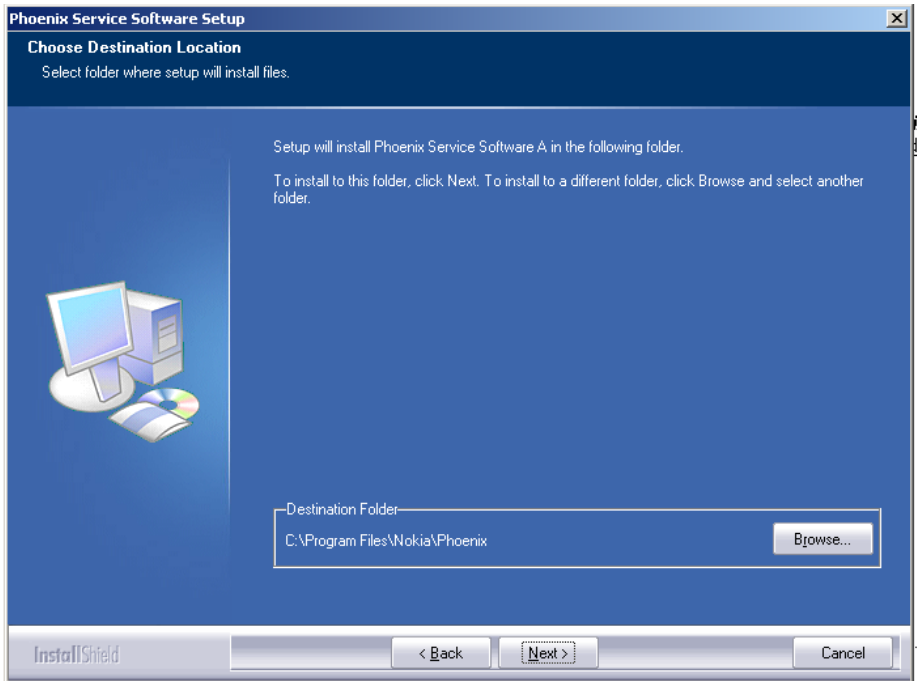


3. Read the text carefully:

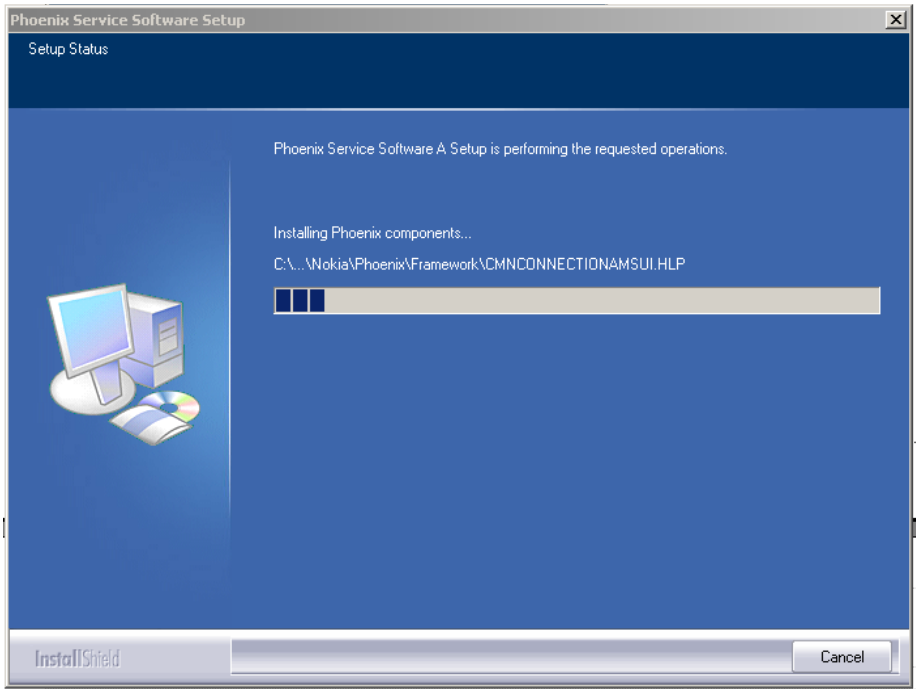


4. Choose destination folder. It is recommended to use the default folder *C:\ProgramFiles\Nokia\Phoenix*.

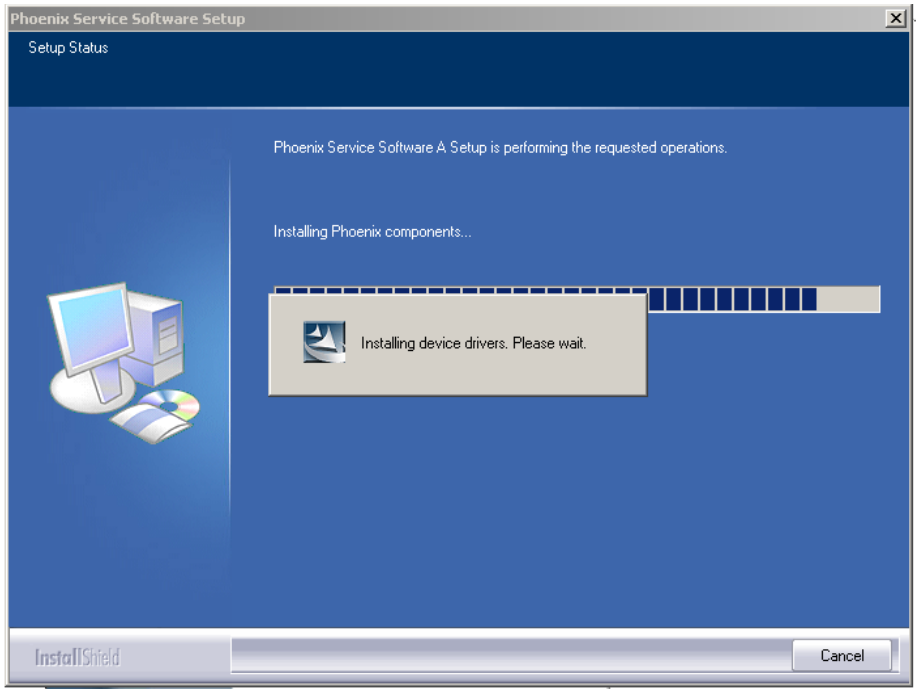
5. To continue, click “Next”. You may choose another location by clicking “Browse” (not recommended).



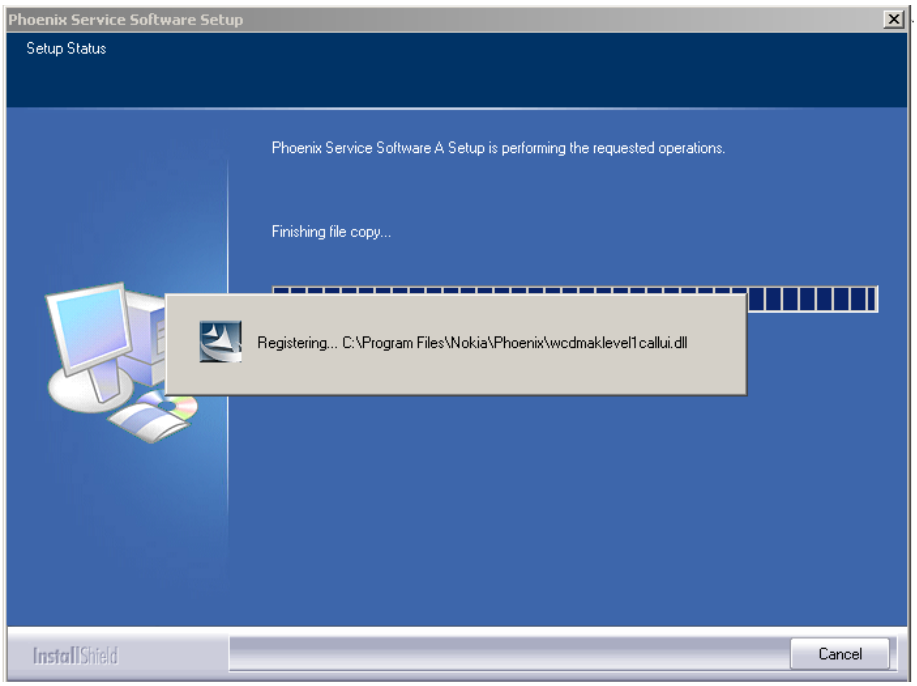
Setup copies the components, progress of the setup is shown. Please wait…



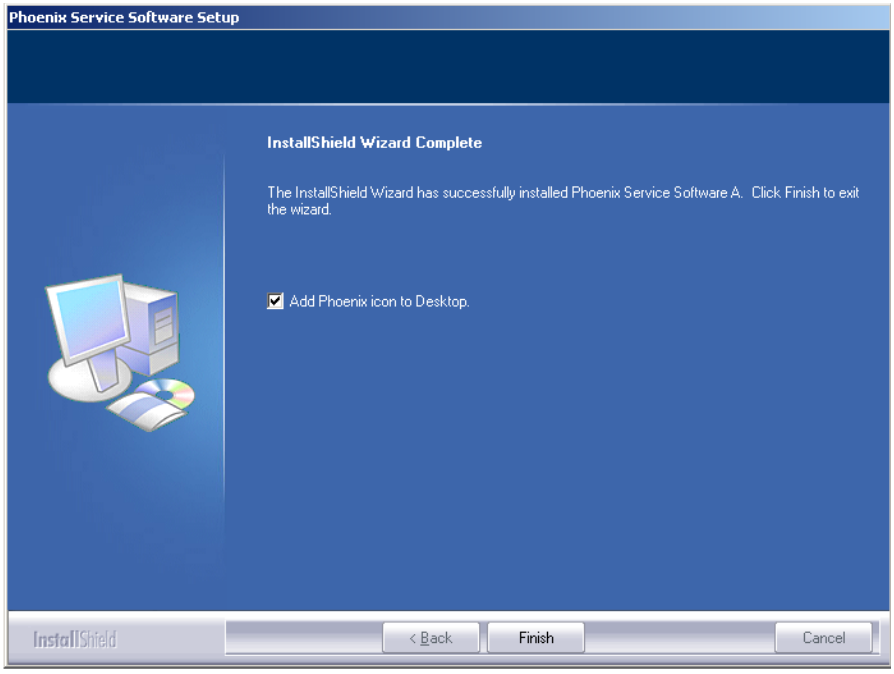
Drivers are installed and updated, please wait. The process may take several minutes to complete.



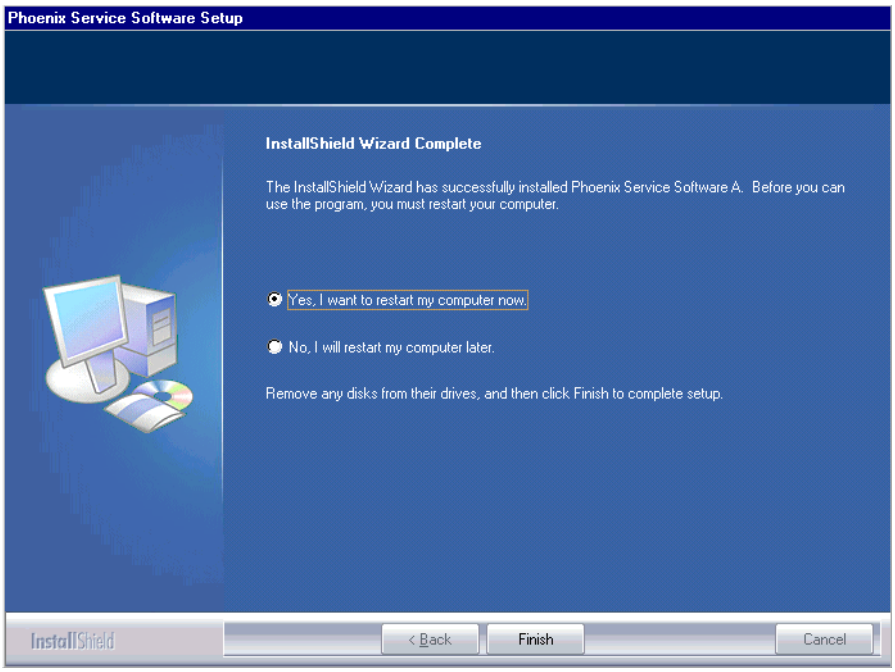
If the operating system does not require rebooting (Windows 2000, XP), the PC components are registered straight away.



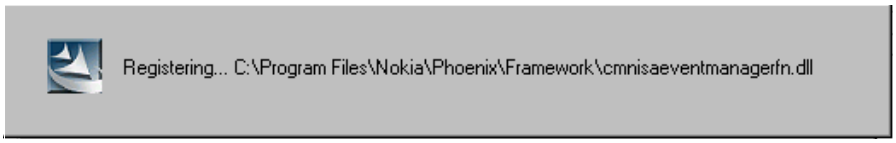
6. Click "Finish". Phoenix is ready for use.



7. **If the operating system used requires restarting your computer**, the Install Shield Wizard notifies you about it. Select "Yes..." to reboot the PC immediately and "No..." to reboot the PC manually afterwards.



After the reboot, components are registered and Phoenix is ready for use. Note that Phoenix does not 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 data package for Phoenix
- Configuring users and connections
- FLS-4S can be used straight away
- FPS-8* can be used after updating flash update package files

Updating Phoenix installation

If you already have the Phoenix service SW installed on your computer, you will 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 data package readme.txt files (shown during installation).

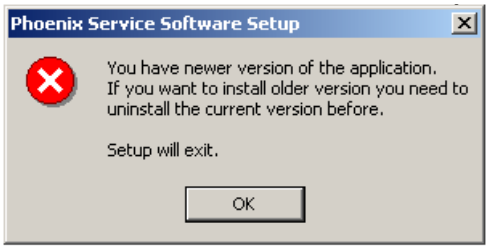
To update Phoenix, you need to take exactly the same steps as when installing it for the first time.

1. Download the installation package to your computer hard disk.
2. Close all other programs.
3. Run the application file (e.g. *phoenix_service_sw_a15_2004_41_5_28.exe).*
4. Newer version of Phoenix is installed.
5. Driver versions are checked and if need be, updated.

When you update Phoenix (e.g. *a10_2003_33_5_22* to *a11_2003_41_5_28.exe*), the update takes place automatically without uninstallation.

If you try to update Phoenix with the same version that you already have (e.g. *a15_2004_41_5_28* to *a14_2004_42_6_28*), you are asked if you want to uninstall the current Phoenix version. In this case you can choose between total uninstallation and repair.

If you try to install an older version (e.g. downgrade from *a15_2004_41_5_28* to *a14_2004_33_5_22)*, installation will be interrupted.

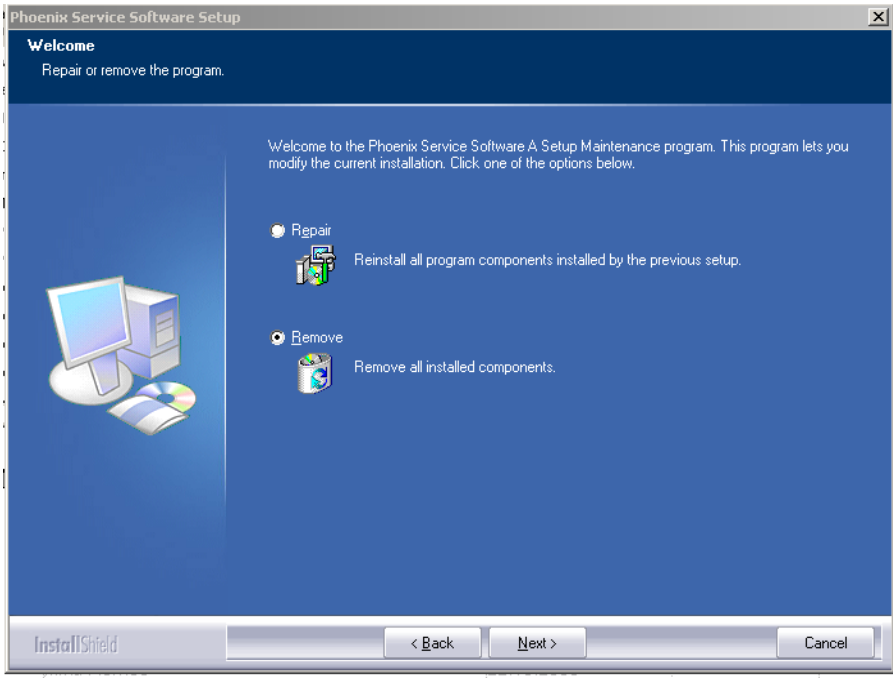


Please always follow the instructions on the screen.

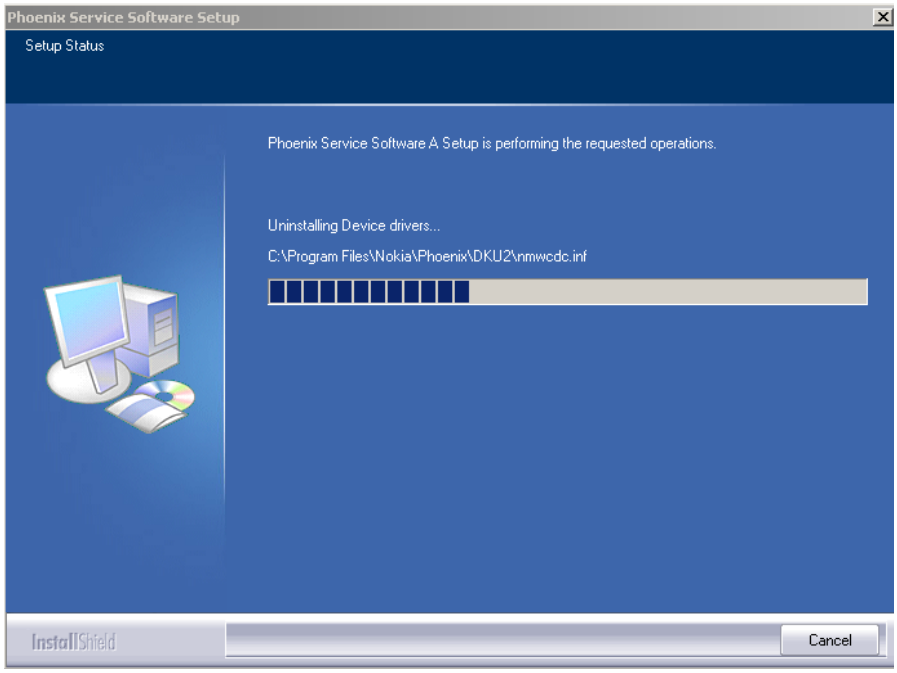
Uninstalling Phoenix

Uninstallation can be done manually from the Windows's control panel.

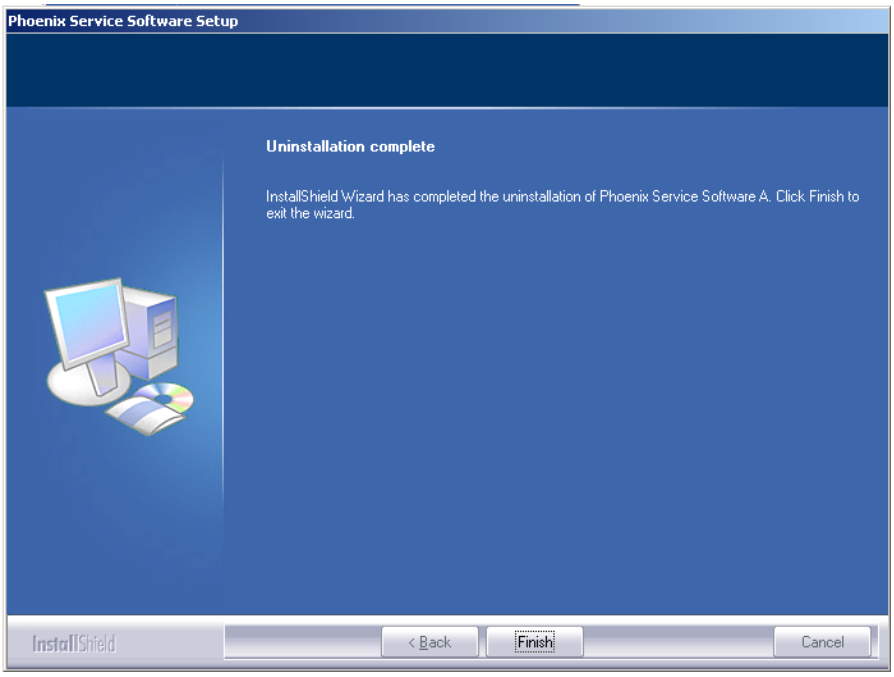
1. Choose Add / Remove Programs -> "Phoenix Service Software".
2. To uninstall Phoenix, click "Add/Remove" -> "Remove".



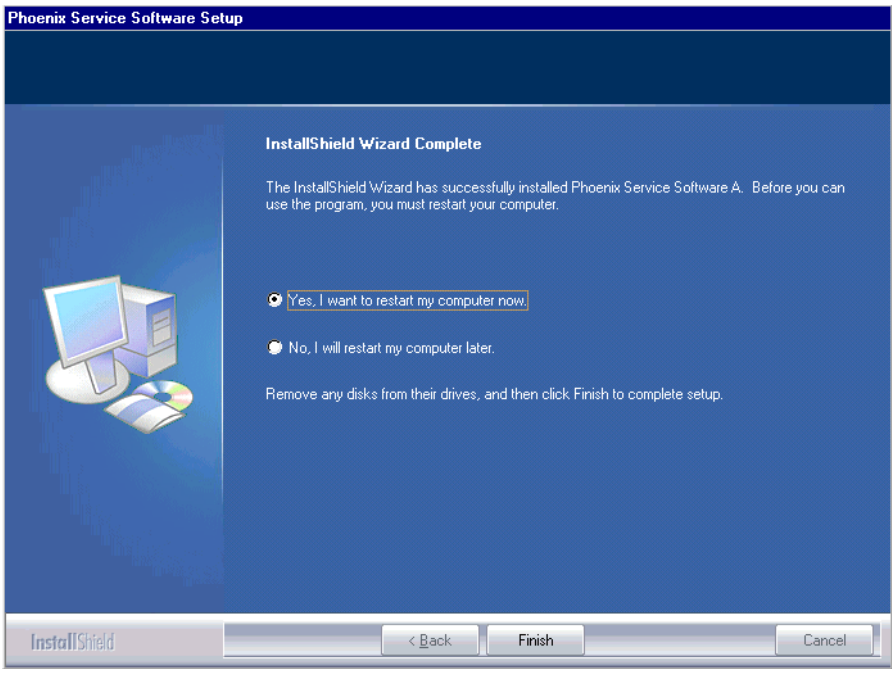
Progress of the uninstallation is shown.



3. **If the operating system does not require rebooting**, click “Finish” to complete.



4. **If the operating system requires rebooting,** Install Shield Wizard notifies you about it. Select "Yes..." to reboot the PC immediately and "No..." to reboot the PC manually afterwards.

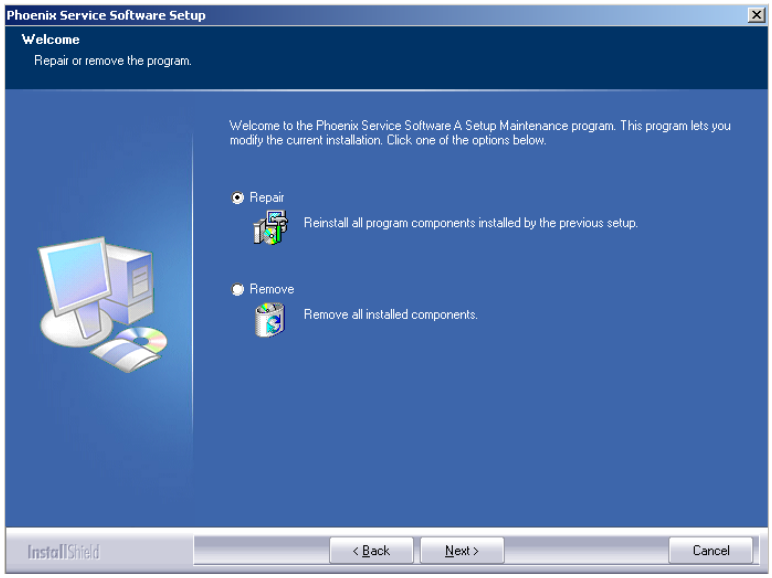


Repairing Phoenix installation

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_a15_2004_41_5_28.exe)* must be found on your PC when you run the repair setup.

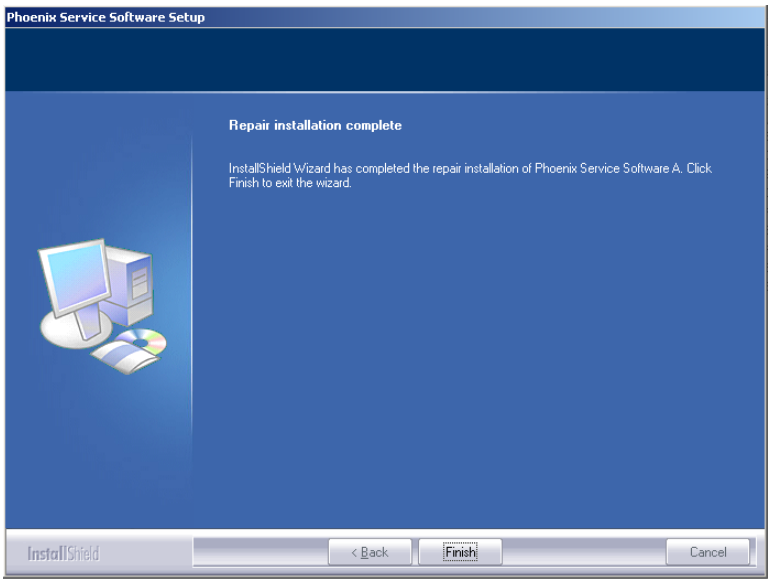
To repair:

1. Run Windows Control Panel.
2. Choose Add / Remove Programs -> “Phoenix Service Software”.
3. Click "Add/Remove". In the following view, select “Repair”.



Phoenix reinstalls the required components and registers them, procedure is the same as in the update installation.

4. To complete, click “Finish”.



Data Package for Phoenix (Product Specific)

Phoenix data package overview

Each product has its own data package (DP). The product data package contains all product-specific data files to make the Phoenix Service Software and tools usable with a certain phone model:

- 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

Data files are stored under C:\Program Files\Nokia\Phoenix (default).

Before installation

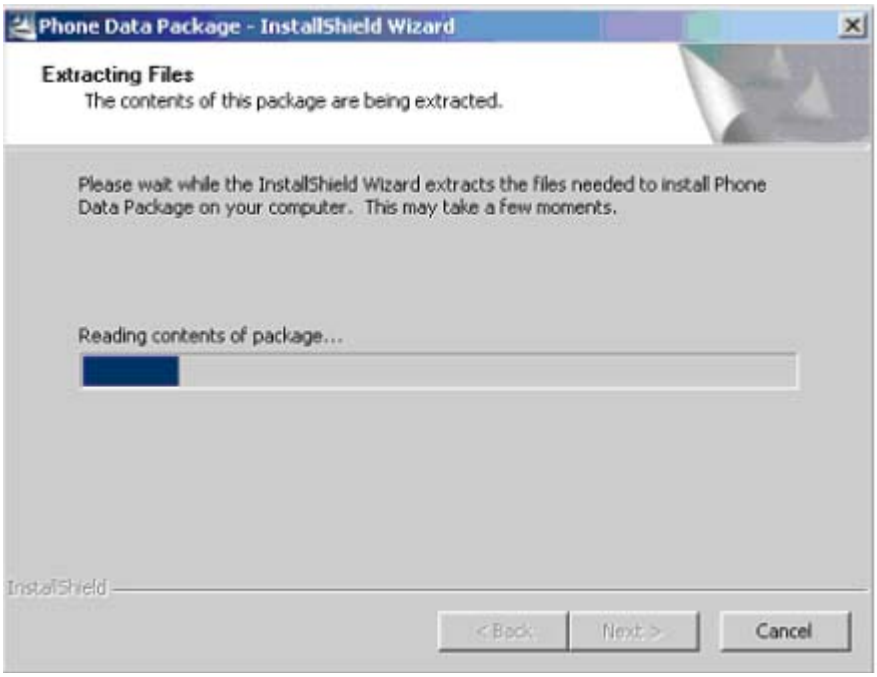
- Product data package contains all product specific data to make the Phoenix service software and tools usable with a certain phone model.
- Check that the dongle is attached to the parallel port of your computer.
- Install Phoenix service SW.
- Download the installation package (e.g. *RA-2/3_dp_v_1.0_MCUSW3_19.exe*) to your computer (e.g. C:\TEMP).
- Close all other programs.
- Run the application file (e.g. *RA-2/3_dp_v_1.0_MCUSW3_19.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 data package version. Always use the latest available versions. Instructions can be found in phone model specific Technical Bulletins and readme.txt files of the data packages.

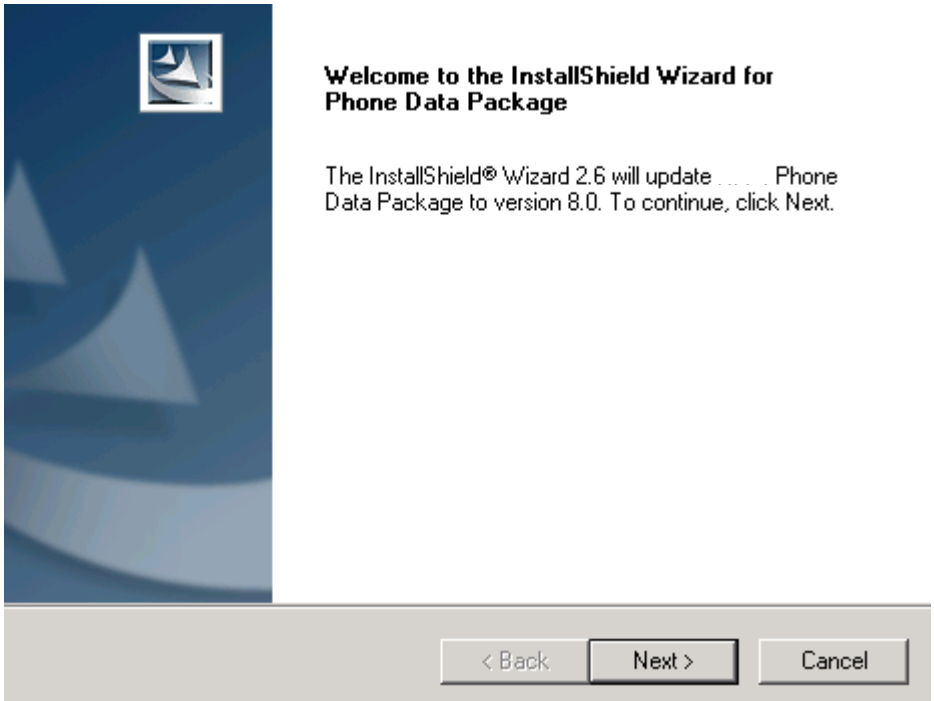
Installing Phoenix data package (product specific)

1. To start installation, run the application file (e.g. *RA-2/3_dp_v_1.0_MCUSW3_19.exe)*.
2. To extract files needed for installation, click “Next”.

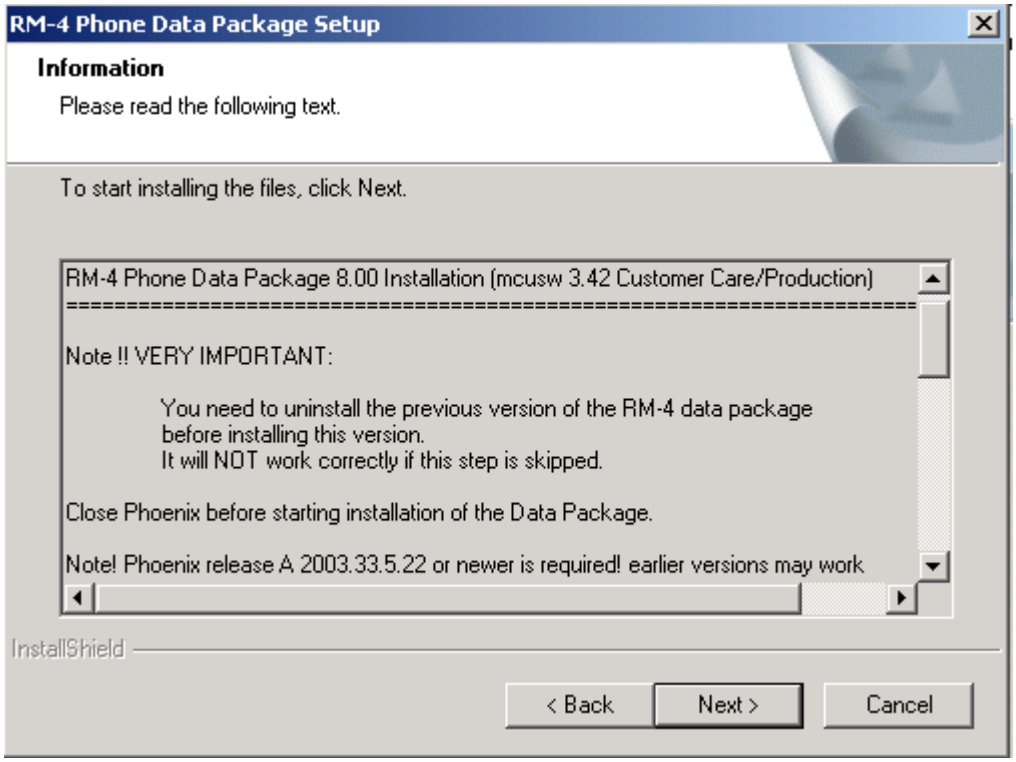
Please wait…



3. To continue, click “Next”.

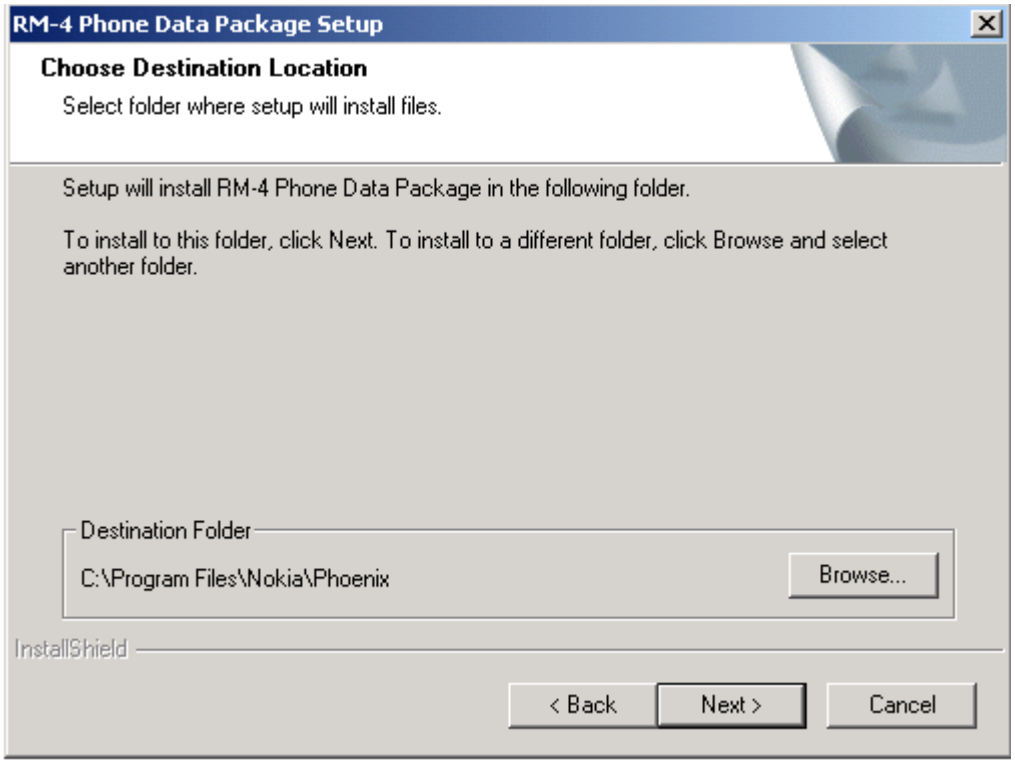


4. From this view, you can see the contents of the data package. **Read the text carefully**. There should be information about the Phoenix version needed with this data package. Click “Next”.

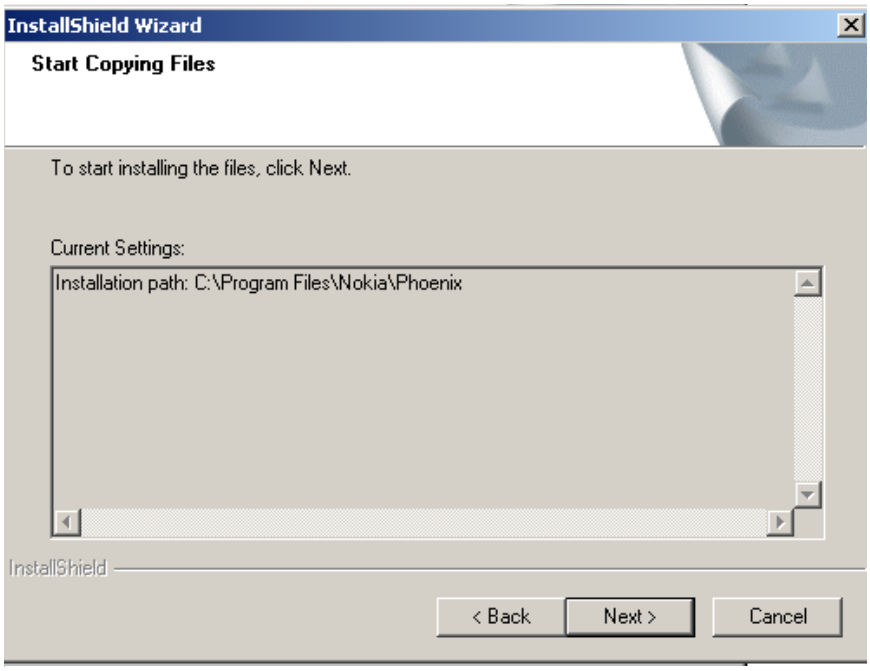


5. To continue, confirm location and click “Next”. Install shield checks where the Phoenix application is installed and the directory is shown.

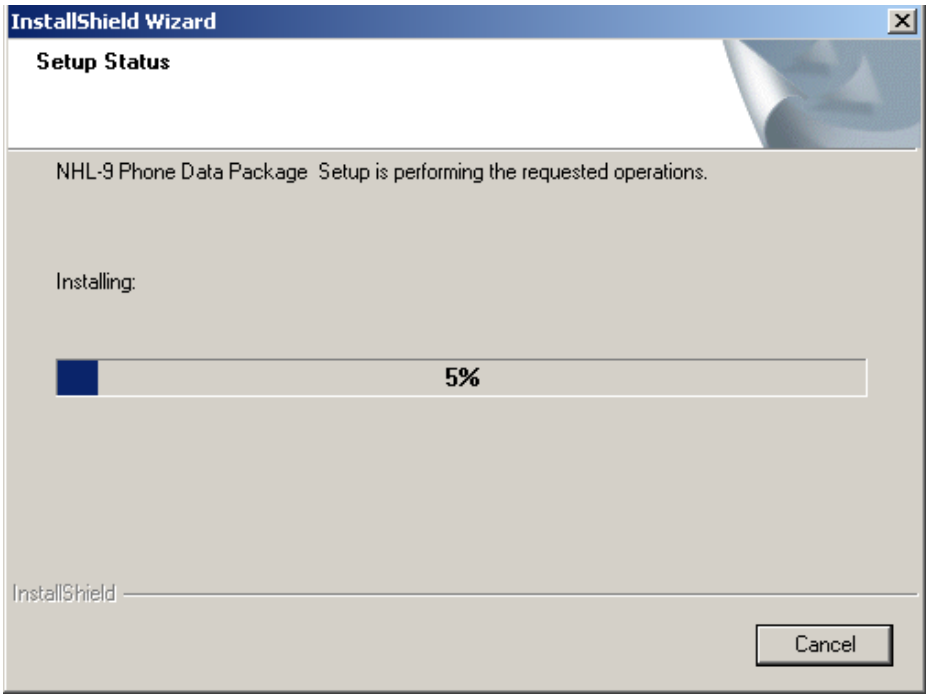
6. To continue, click “Next”.



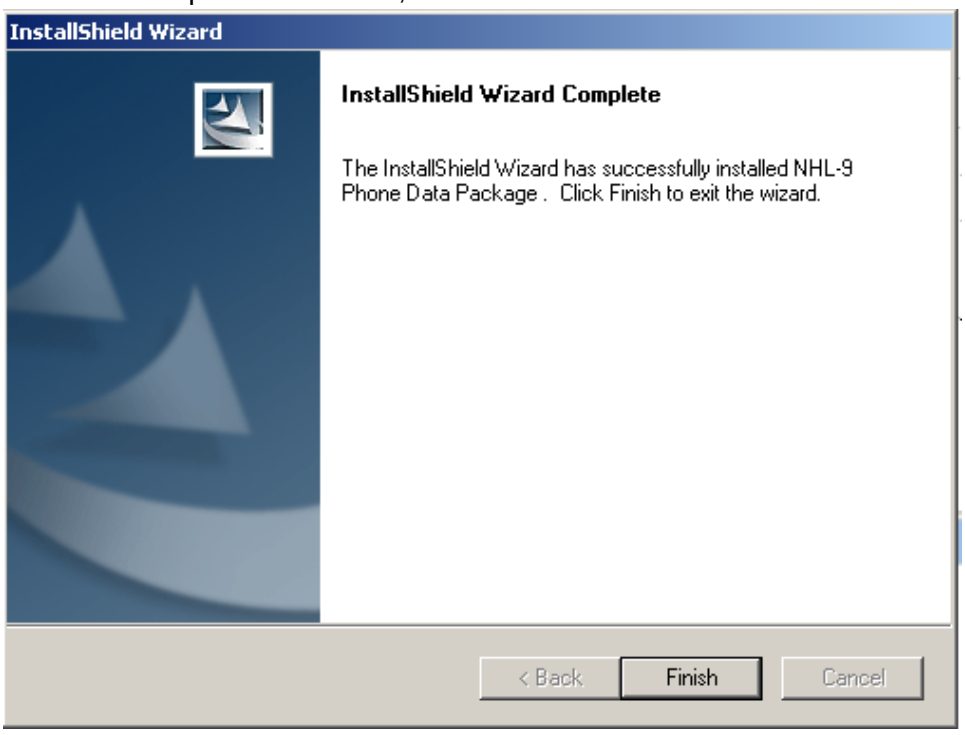
7. To start copying the files, click “Next”.



Phone model specific files are installed. please wait.



8. To complete installation, click “Finish”.



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

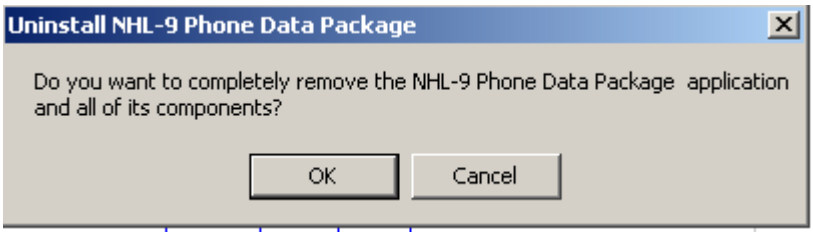
Now Phoenix can be used to for example flash phones and print type labels after:

- Configuring users
- Managing connections
- FLS-4S can be used right away
- FPS-8* can be used after updating flash update package files to it

Uninstalling data package

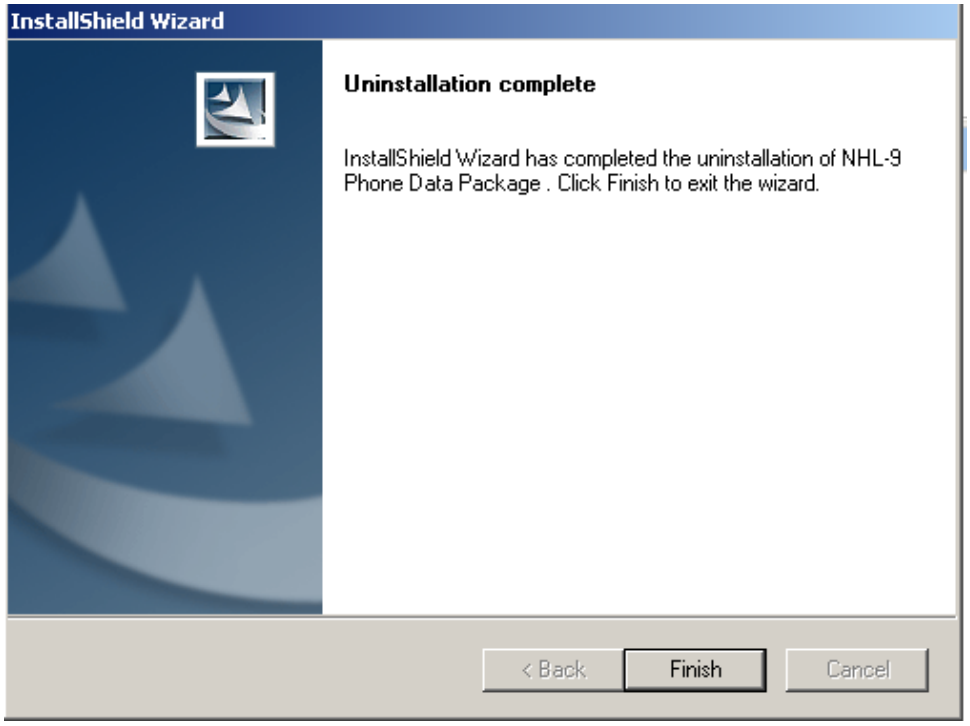
1. To uninstall the data package manually from Windows, choose Control Panel / Add / Remove Programs/ -> RA-2/3 Phone Data Package.

2. If you try to install the same version of Phoenix data package that you already have, you are asked if you want to uninstall the current version. Answer “OK” to uninstall, “Cancel” if you do not want to uninstall.



Older versions of data packages need not 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.

3. Once the previously installed data package is uninstalled, click “Finish”.

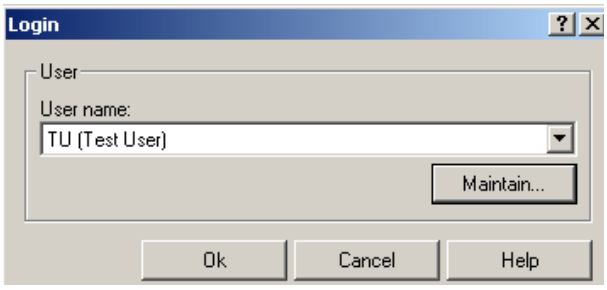


4. To continue installation from the beginning, run the *RA-2/3_dp_v_1.0_MCUSW3_19.exe* again.

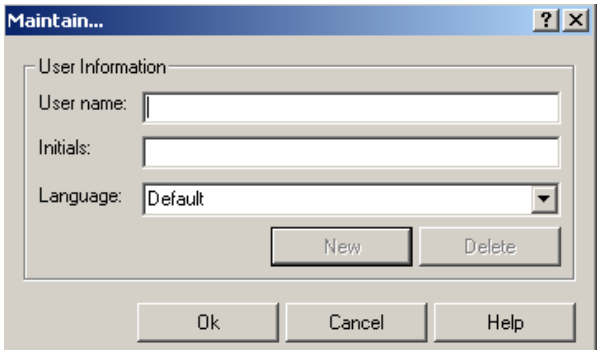
Configuring Users

To configure users:

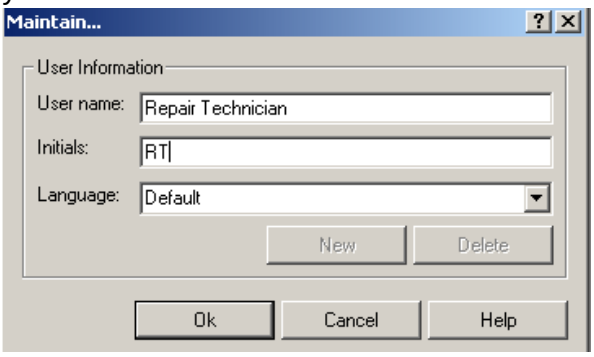
1. Start Phoenix service SW and login.
2. To add new user or edit an existing one, click “Maintain”. If a user ID is already configured, choose your own user ID from the list and click “OK”.



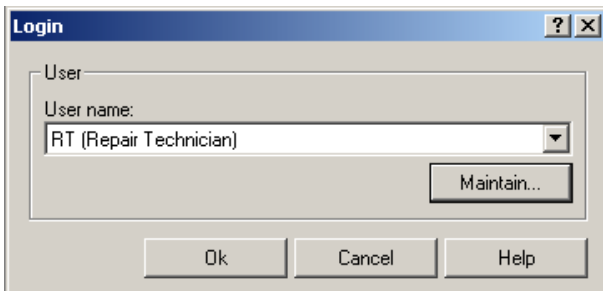
3. To add information for the new user, click “New”.



4. Type in your name and Initials to fields and click “OK”.



5. User has now been created, click “OK”. You are now able to login with this username, click “OK”



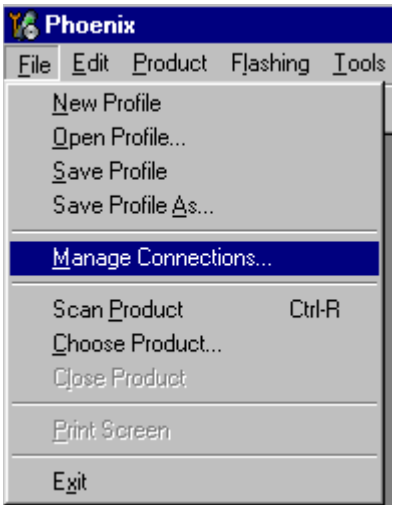
Managing Connections

Manage connections feature in Phoenix is for selecting, editing, and deleting existing connections, and creating new ones.

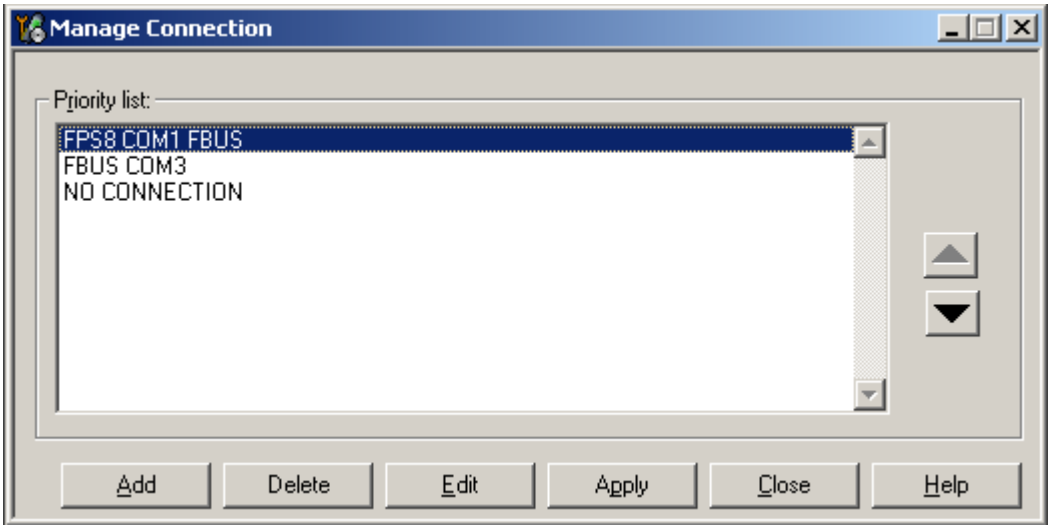
To manage connections:

1. Start Phoenix service SW and login.

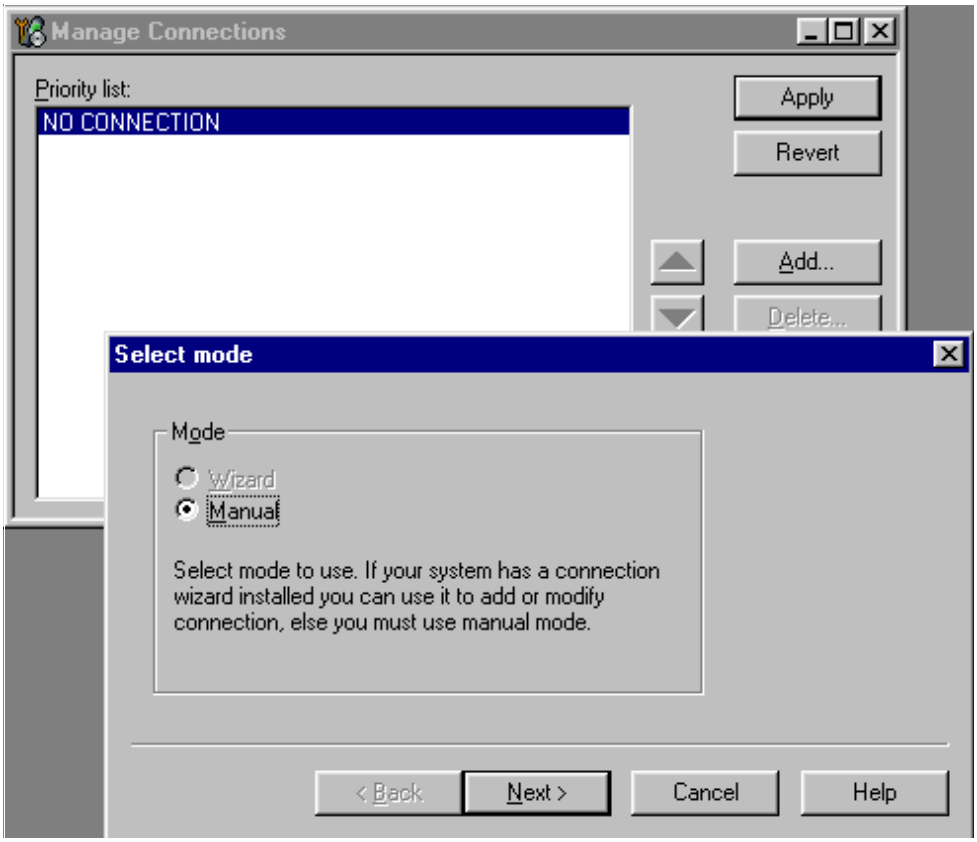
2. From the “File” menu, choose “Manage Connections”.



3. In this dialog, you can select, edit, delete existing connections and create new ones. You can create a connection either manually or by using a Connection Wizard.
To add new connection, click “Add” and select if you want to create it manually or by using the Wizard.



4. To continue, click “Next”.



5. In the next dialogs, choose settings for the connection:

Manual settings

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

Media: FBUS
COM Port: Virtual COM Port used by FLS-4 **Please always check this!**
(To check, go to Windows / Control Panel / FLS Virtual Port / Configuration)

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

Media: FPS-8
Port Num: COM Port where FPS-8 is connected
COMBOX_DEF_MEDIA: FBUS

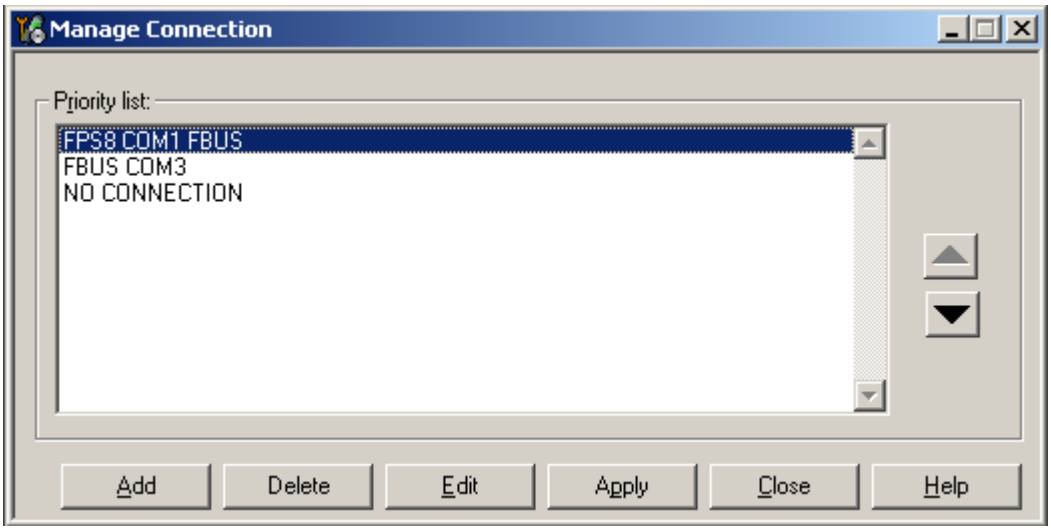
6. To complete, click “Finish”.

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

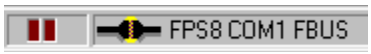
8. To activate the connection you want to use, click it and use up/down arrows to move it on top of the list.

9. Click “Apply”.

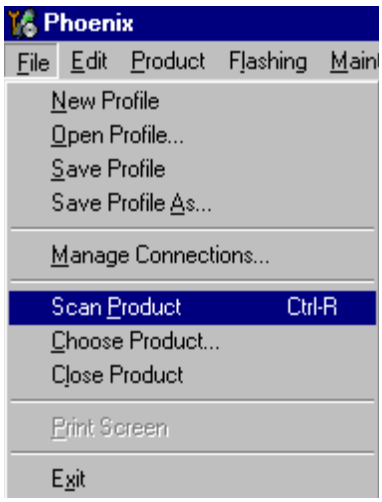
The connection is now selected and can be used after closing the “Manage Connections” window.



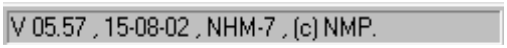
The selected connection is shown at the right-hand bottom corner of the screen.



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



When a product is found, Phoenix loads product support and when everything is ready, the name of the loaded product support module and its version are shown at the bottom of the screen, for example:



Updating Flash Support Files for FPS-8* and FLS-4*

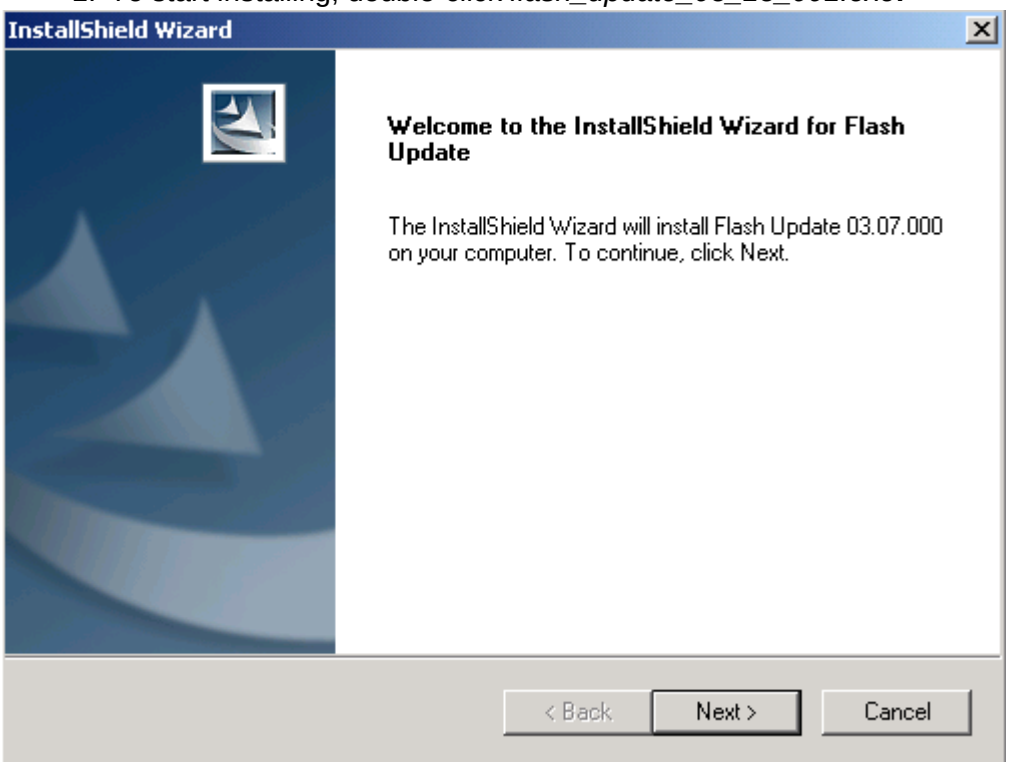
Before installation

- Install Phoenix service SW.
- Install phone model specific data package 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 Phoenix and phone's data package because the Phoenix installation always includes the latest flash update package files for FLS-4S / FPS-8*.
- Separate installation package for flash support files is available, and the files can be updated by following these instructions (if updates appear between Phoenix / data package releases).

Installing flash support files (only separate installation package)

If you are not using a separate installation package, you can skip this section.

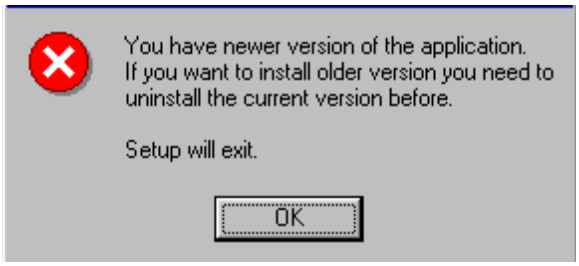
1. To start installing, double-click *flash_update_03_13_001.exe*.



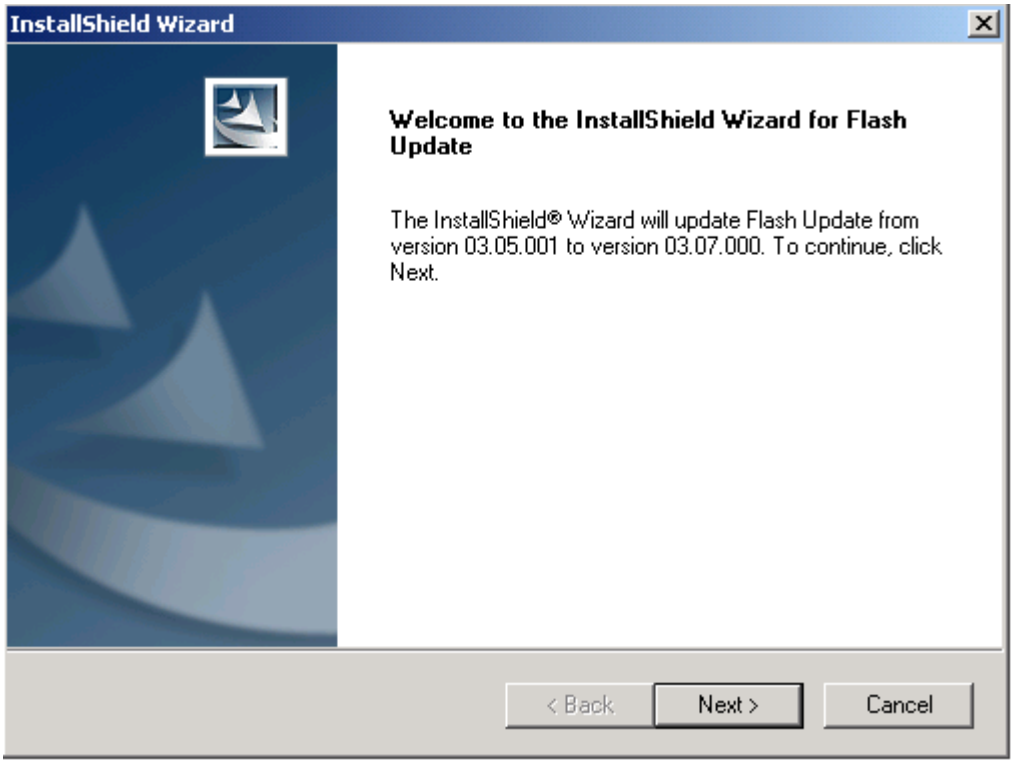
If the same version of the flash update package already exists, and you want to reinstall it, the previous package is first uninstalled. Restart installation again after

that.

If you try to downgrade the existing version, the setup will be aborted. However, if you want to downgrade, uninstall newer files manually from the Control Panel and then rerun the installation again.



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

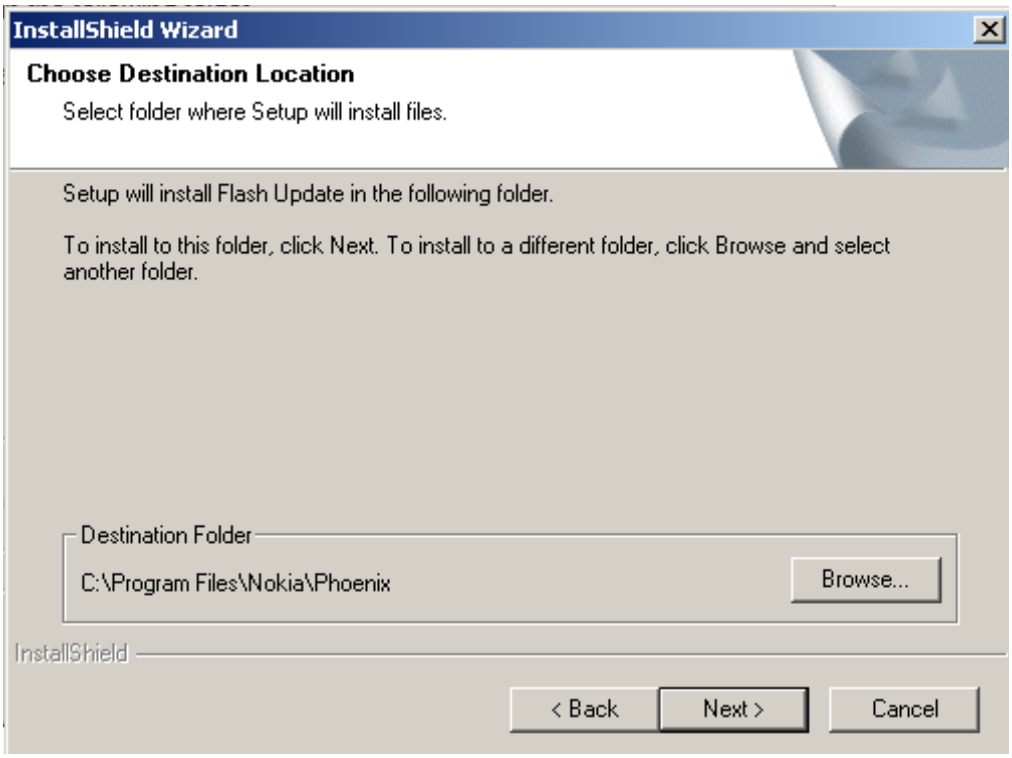


It is **highly** recommended to install the files to the default destination folder *C:\Program Files\Nokia\Phoenix*.

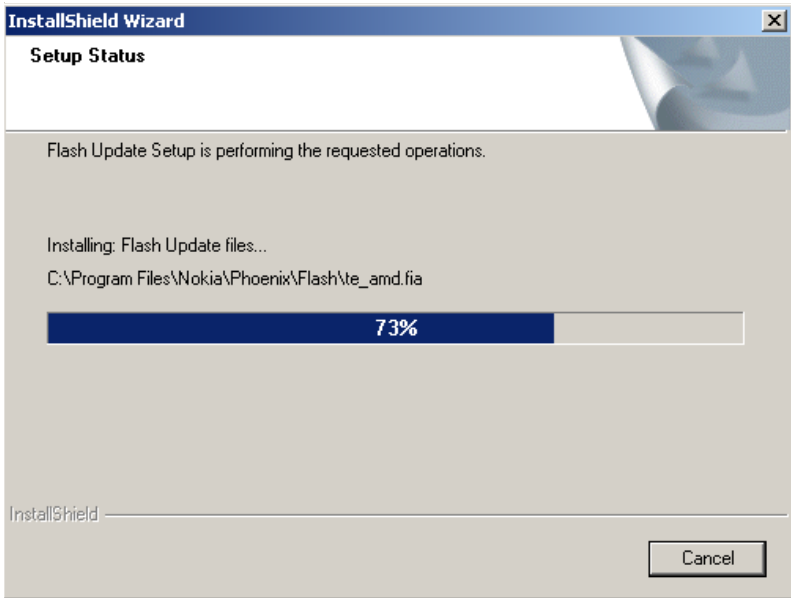
2. To continue, click “Next”.

Note! When installing the flash update files for the first time you may choose an-

other location by clicking "Browse" (not recommended).



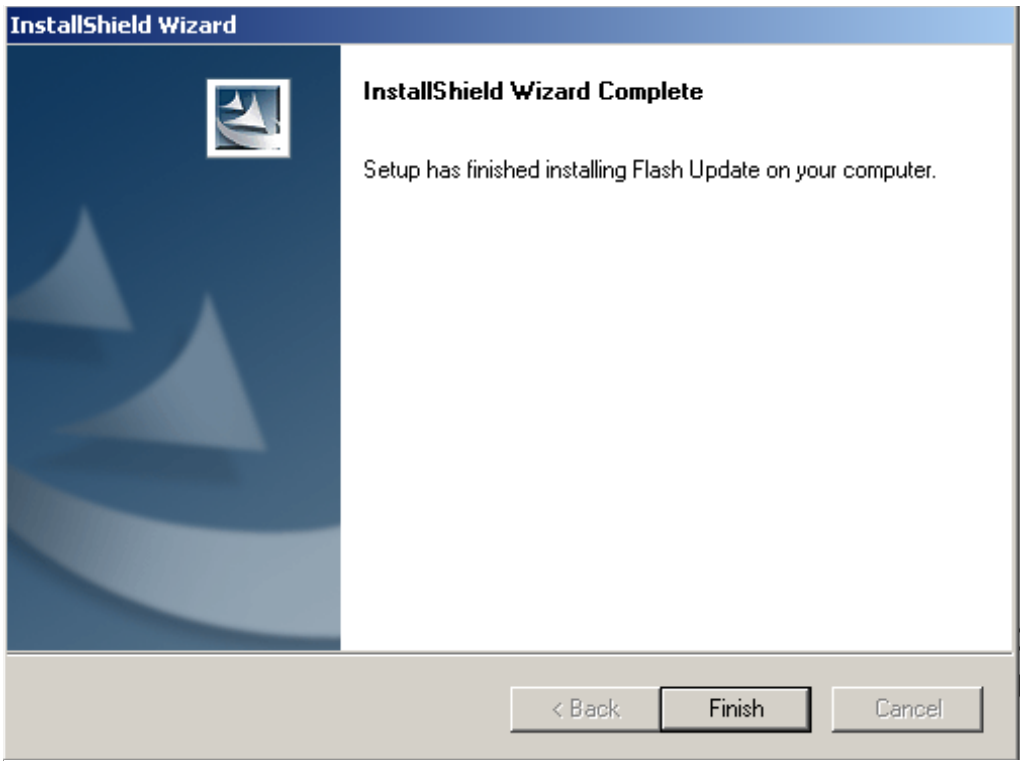
The installation continues…



3. To complete the procedure, click "Finish".

FLS-4 can be used right after the flash update package is installed.

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



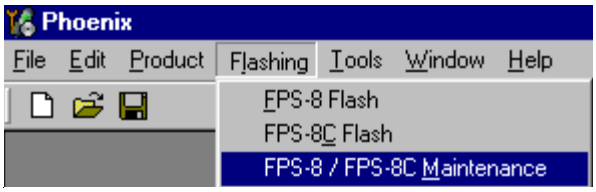
Updating FPS-8* flash prommer SW

There are two ways to update the FPS-8 flash prommer software:

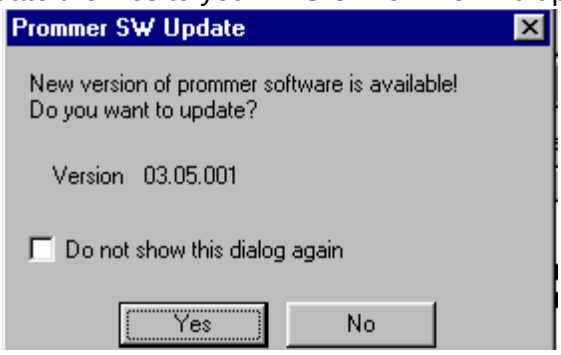
Option 1:

1. Start Phoenix service software and login.
2. Manage connection correctly for the FPS-8* flash prommer.

3. From the ”Flashing” menu, choose ”FPS-8 Maintenance”

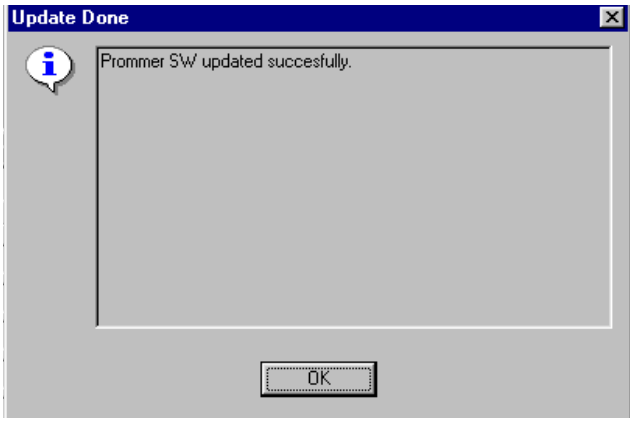


4. When a new FPS-8 flash update package is installed to your computer, you are asked to update the files to your FPS-8 Prommer. To update files, click ”Yes”.

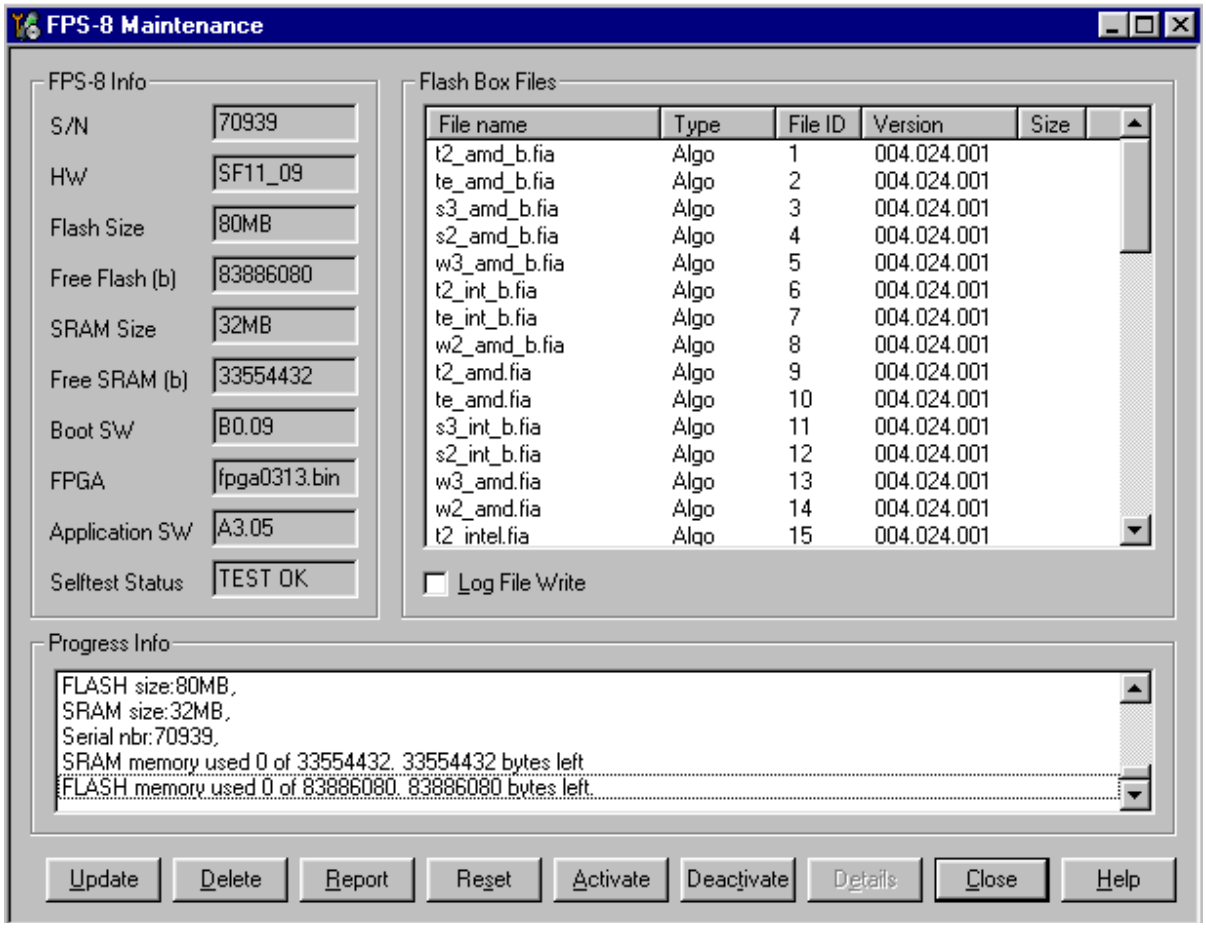


The update procedure takes a couple of minutes, please wait until you are notified that the update has been successful.

5. Click “OK” and close the “FPS-8 Maintenance” window.



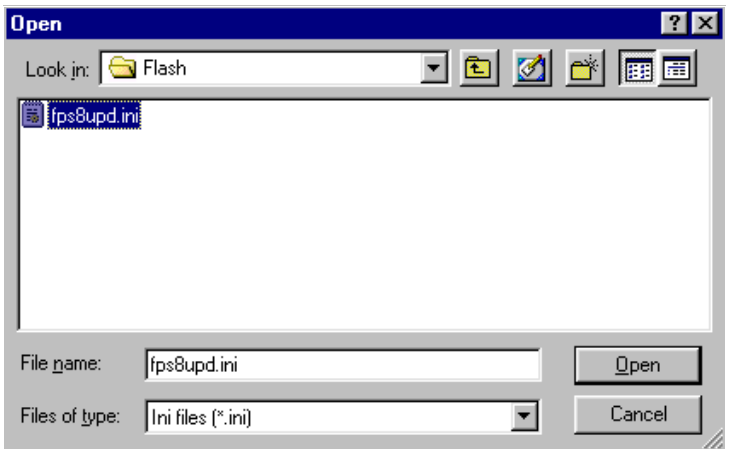
View after successful prommer software update.



Option 2:

1. Click the ”Update” button.

2. Select the appropriate **fps8upd.ini** file under the *C:\Program Files\Nokia\Phoenix*Flash directory



3. All files can be loaded separately to FPS-8. To do this, press the right mouse button in the ”Flash box files” window and select the desired file type. More information and help can be found from the “Help” dialog.

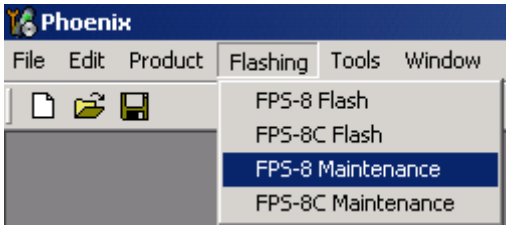
Activating and Deactivating FPS-8

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

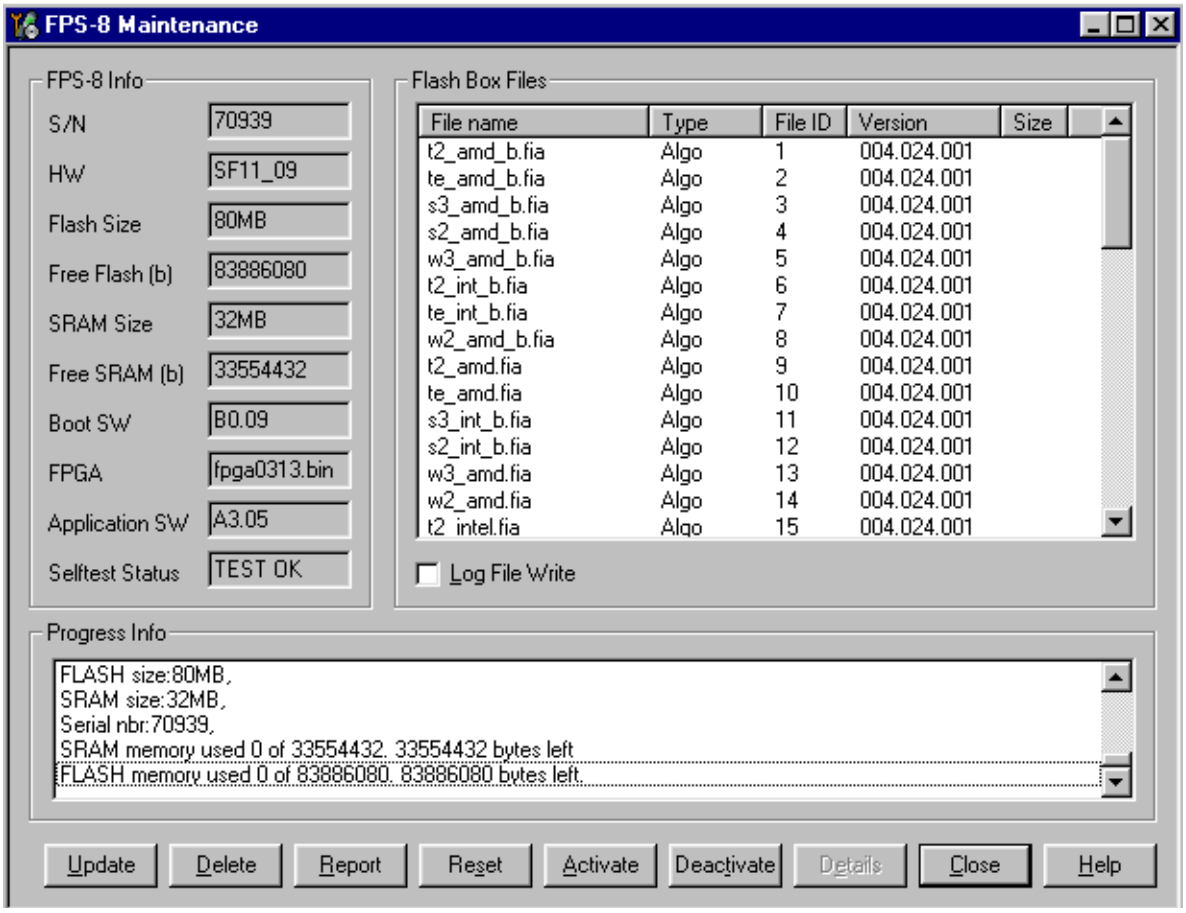
If there is a need to send the FPS-8 box to somewhere, e.g. for repair, the box must be first deactivated.

Activating FPS-8

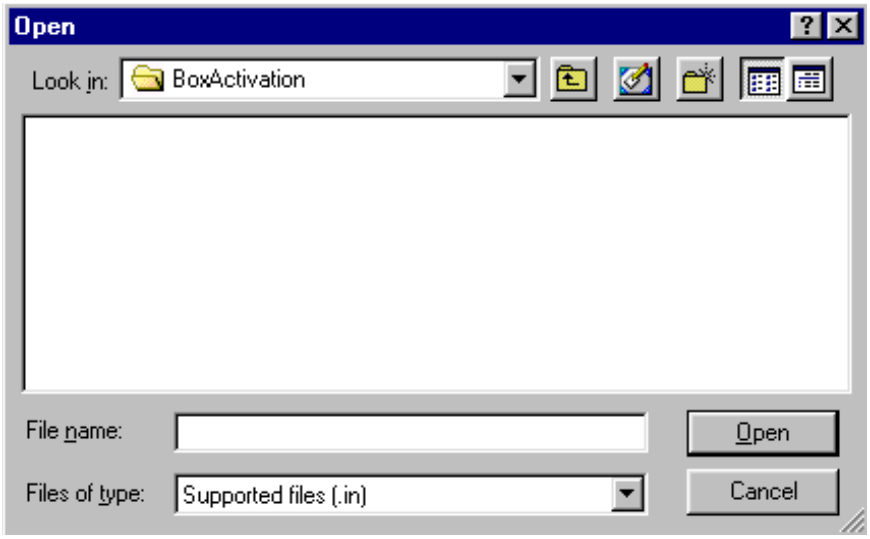
1. Fill in the “FPS-8 activation request” sheet included in the FPS-8 sales package and follow the instructions given in the sheet.
2. When the activation file is received (e.g. 00000.in), copy it to *C:\Program Files\Nokia\Phoenix\BoxActivation* directory (this directory is created when Phoenix is installed).
3. Start Phoenix service software.
4. From the Flashing menu, choose ”FPS-8 Maintenance”.



5. In the “FPS-8 Maintenance” window, click “Activate.”.



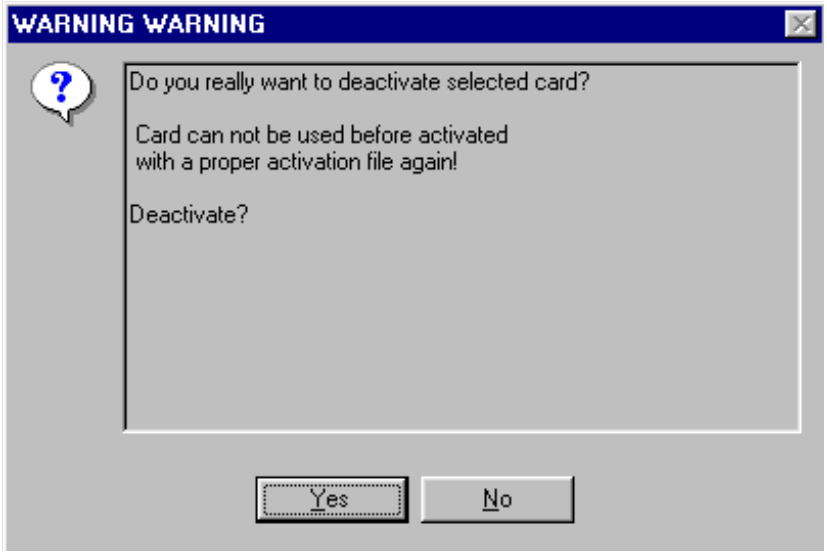
The activation file you saved to *C:\ProgramFiles\Nokia\Phoenix\BoxActivation* is displayed (e.g. 00000.in), check that it is correct.



6. To activate the box, click “Open”.
7. To complete the activation, turn FPS-8 power off and on.

Deactivating FPS-8

1. Start Phoenix service software.
2. From the ”Flashing” menu, choose ”FPS-8 Maintenance”.
3. In the “FPS-8 Maintenance” window, click “Deactivate”.
4. To confirm deactivation, click “Yes”.



The box is deactivated.

5. To complete deactivation, turn FPS-8 power off and on.

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

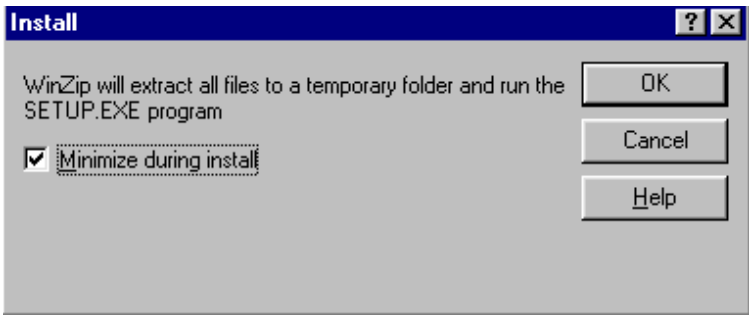
- Download the *Jbv1_18_update.zip* file to your computer (e.g. C:\TEMP) from your download web site.
- Close all other programs.
- Follow instructions on the screen.

Installing SW needed for the JBV-1 SW update

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

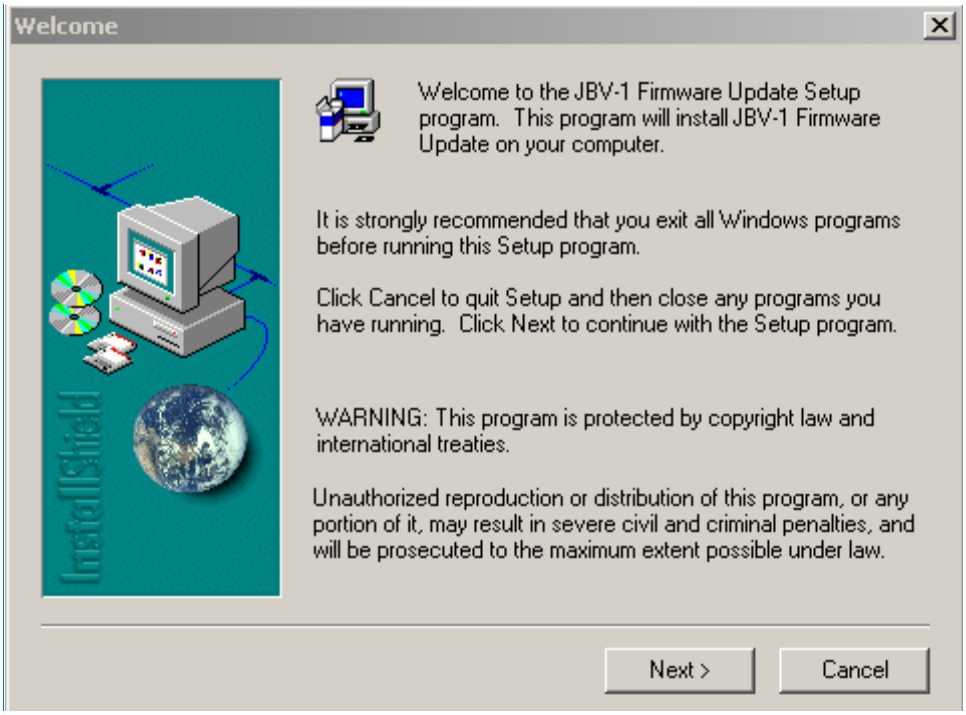
1. To run the Jbv1_18_update.zip file and start SW installation, double click “Set-up.exe”.

   Files needed for JBV-1 package setup program are extracted.

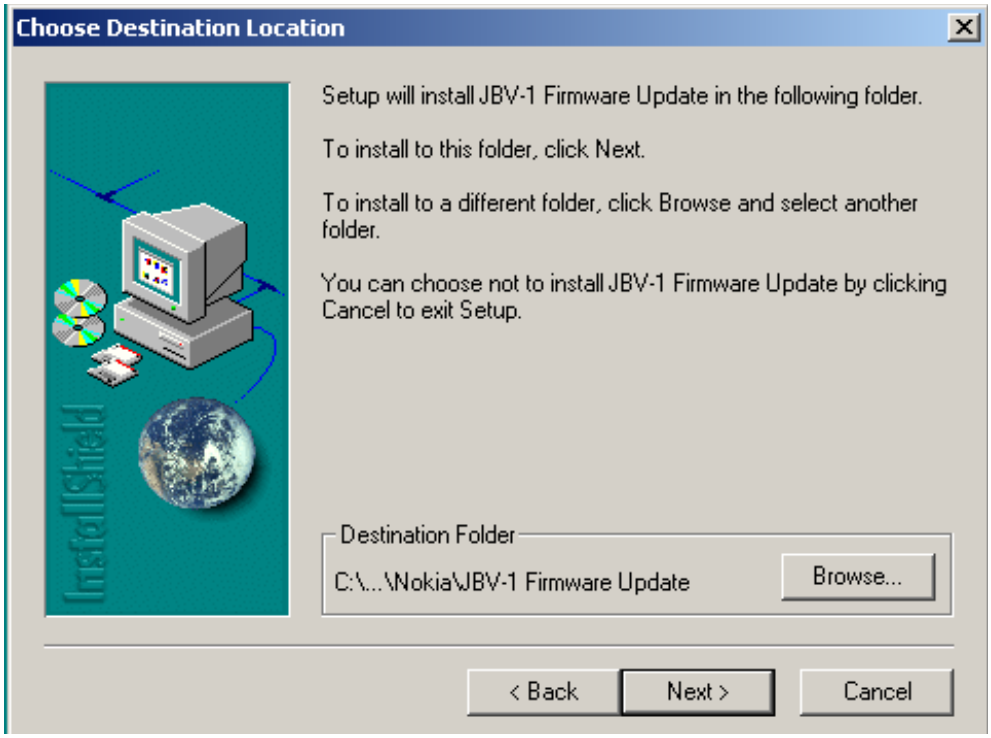


   Installation begins, please read the information displayed.

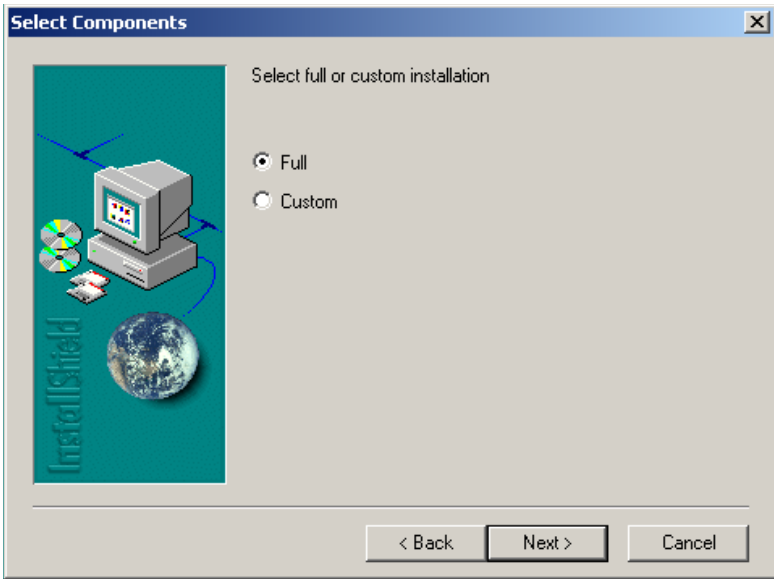
2. To continue, click “Next”.



3. Use the destination folder suggested which JBV-1 SW package is installed to and click “Next” to continue.



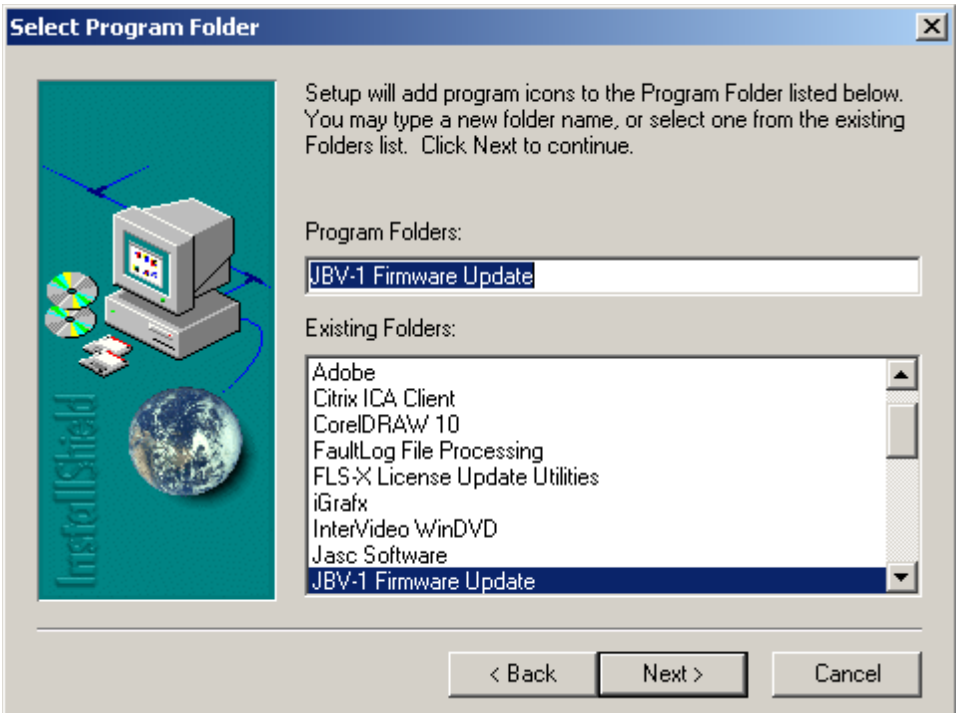
4. To continue, select “Full” and click “Next”.



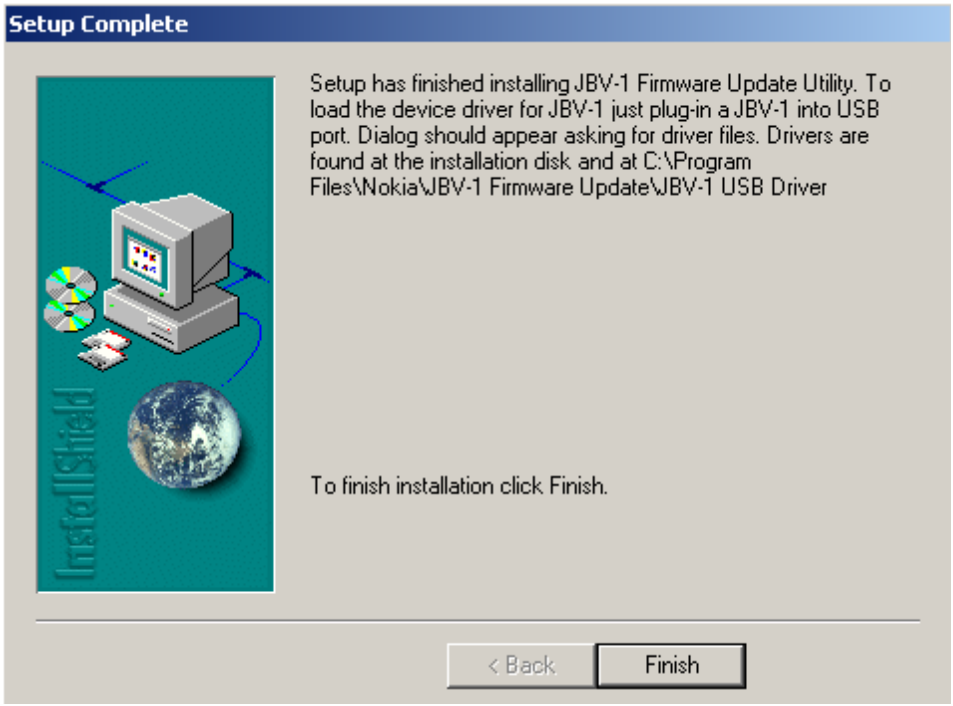
The program folder is created.

5. To continue, click “Next”.

Software files are installed.



6. After a successful installation, click “Finish” to complete.



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

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

8. 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 detects the connected USB cable and drivers for the new HW. 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 begins.

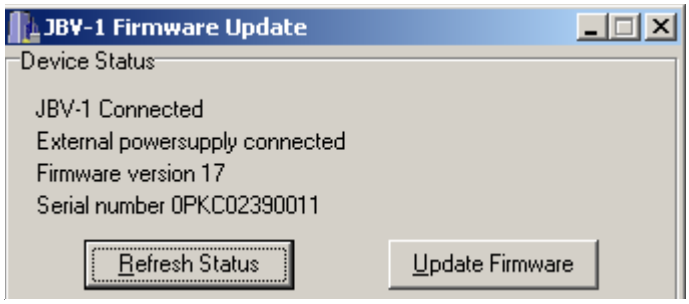
9. Go to folder *C:\Program Files\Nokia\JBV-1 Firmware Update\JBV-1 Firmware Update.*

10. To start the JBV-1 SW update, double click **fwup.exe**.

JBV-1 firmware update starts and shows the current status of the connected JBV-1.

11.If the 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. To do this, click “Update Firmware”.

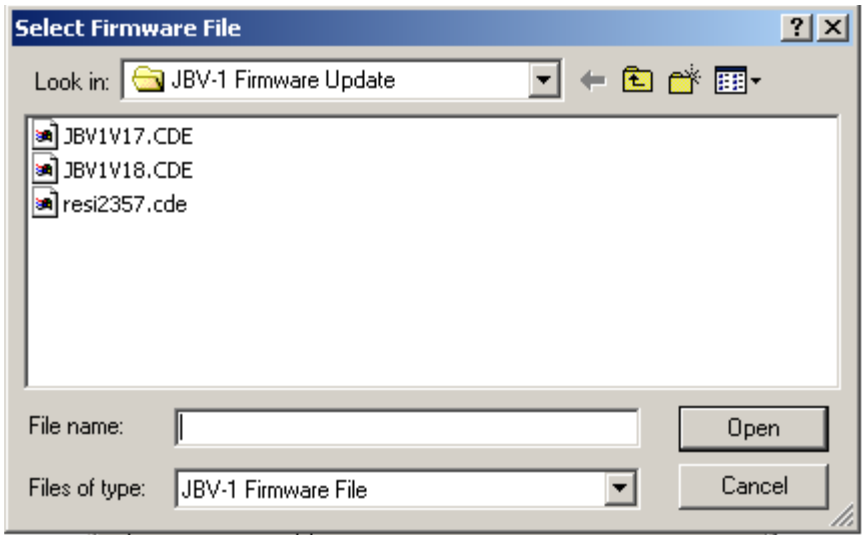
If you simply want to check the SW version, click “Refresh Status”.



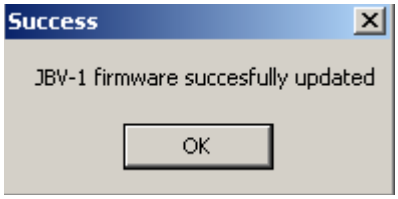
12.To update your JBV-1 to the latest version 18, choose file *JBV1v18.CDE* and “Open”.

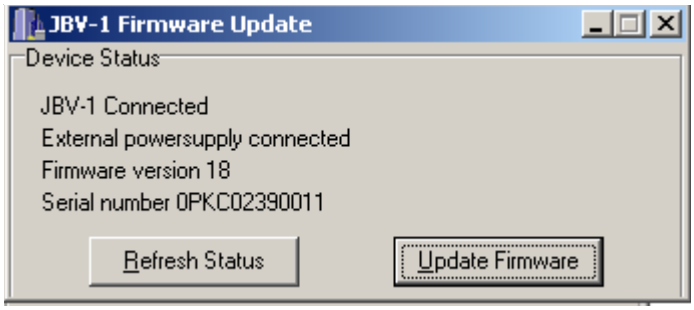
Please wait, it takes a while until you can hear a “click” from the JBV-1.

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.



13.After a successful update, click “OK” and the current JBV-1 status is displayed.





You have now updated the JBV-1 software and it is ready for use.

If you have several docking stations you need to update, disconnect the power & USB cables from the previous one and connect them to the next docking station.

14.To see the current SW version, click “Refresh Status”.

15.To update the SW, click “Update Firmware”.

16.After you have updated all docking stations, close the “JBV-1 Firmware Update” dialog.

RF 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 software 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.
- Screenshots 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.

NOTE! *RF tunings need to be done ONLY if any RF block component or UEM (or D3000 FLASH) is replaced. However, RF tunings are also recommended if tuning values have disappeared for some reason.*

Service Tool Concept for RF Tuning Operations

- All RF tuning operations must be carried out in the MJ-19 module jig.
- Power to MJ-19 must be supplied from an external DC power supply, not from the FPS-8 prommer.
- MJ-19 input voltages:

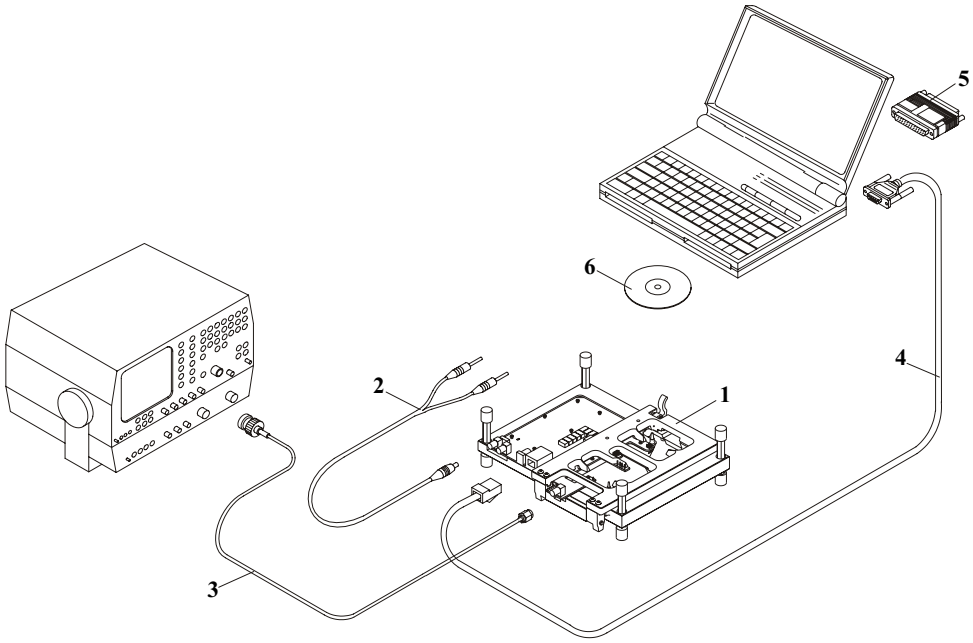
  Maximum + 12 VDC

  Nominal input for RF tunings is +? V DC

  Minimum + 4V DC

- Remember the cable attenuation when setting required RF levels

Figure 1: RF tuning setup



Item	Service accessory	Type	Product code
1	Module jig	MJ-19	0780372
2	DC power cable	PCS-1	0730012
3	Modular cable	XRF-1	0730085
4	Service Mbus cable	DAU-9S	0730108
5	Software protection key	PKD-1	0750018
6	Service SW	CD-ROM	

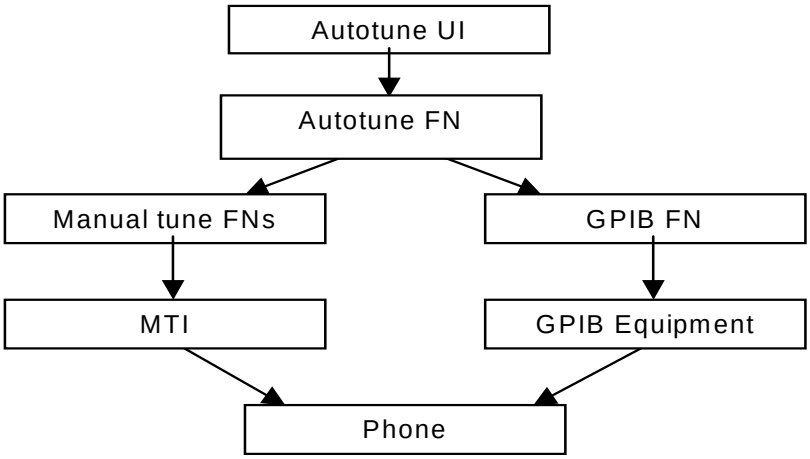
Autotuning

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.

The following diagram describes where the autotune component is located in the TSS architecture:

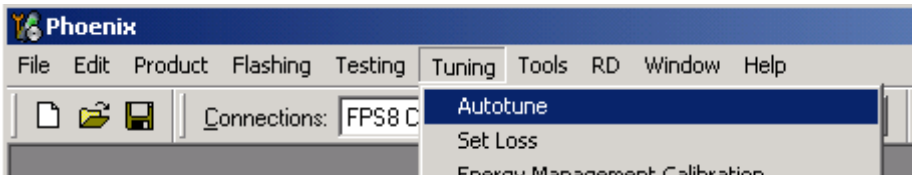
Figure 2: Autotune component in TSS architecture



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.

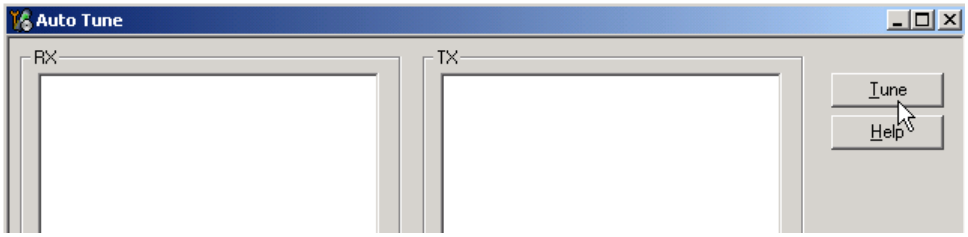
The Autotune component is located in the Tuning menu:

Figure 3: Autotune menu in Phoenix



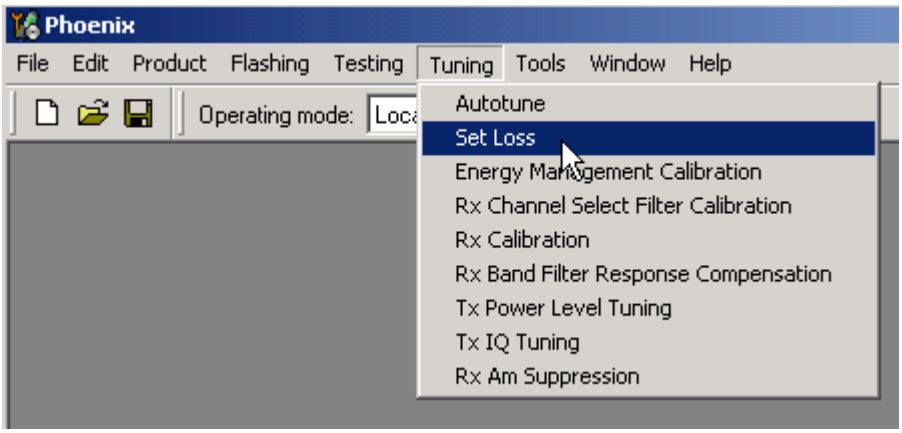
Note! This menu is not visible with PKD-1 and PKD-1P dongles.

Figure 4: Autotune menu - RX/TX menu



Set Loss

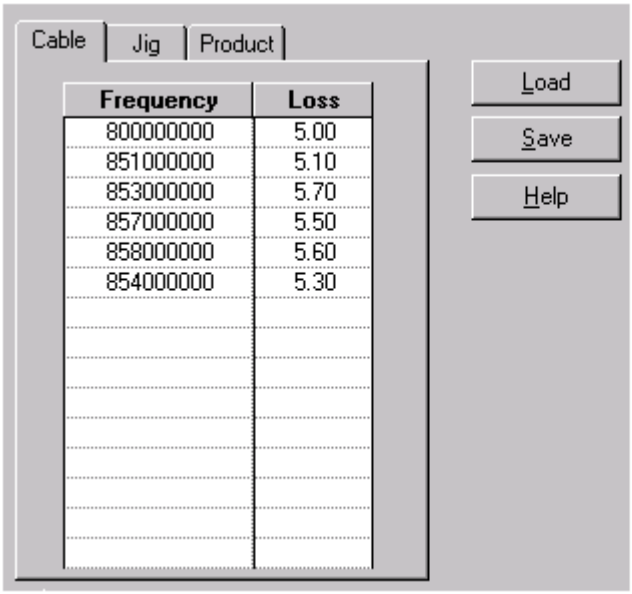
Figure 5: Set Loss menu



Set Loss 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 the Autotune 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 Autotune uses.

Figure 6: Loss values



Environment

Hardware requirements:

PC with Windows 2000/XP.

Power supply

Product specific module jig

RF-splitter and -cables

RF equipment (only one of each is needed)

TX/RX:

CMU200

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 7: Preferred setup environment

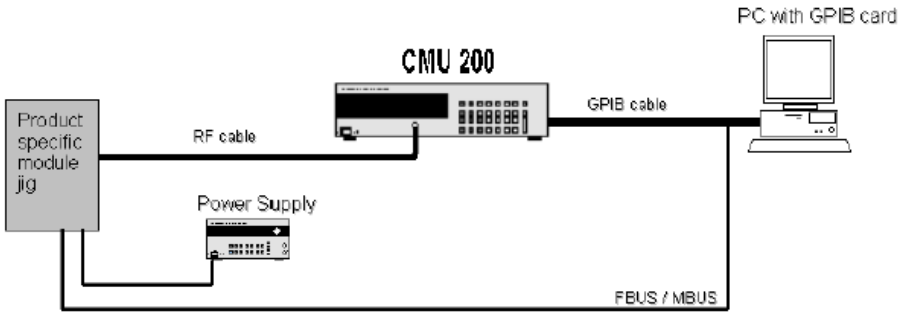
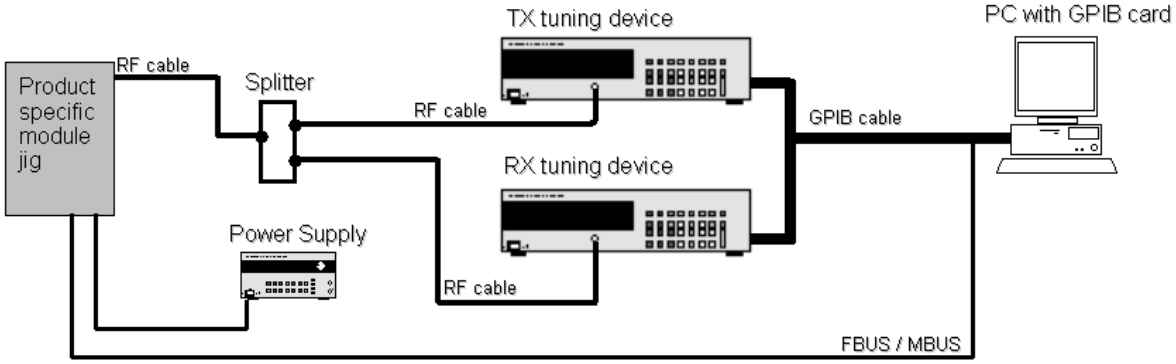


Figure 8: Alternative setup environment



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.

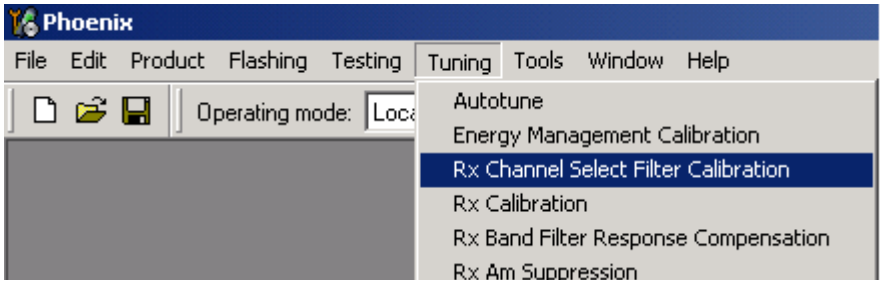
Receiver Manual Tuning

Rx Channel Select Filter Calibration

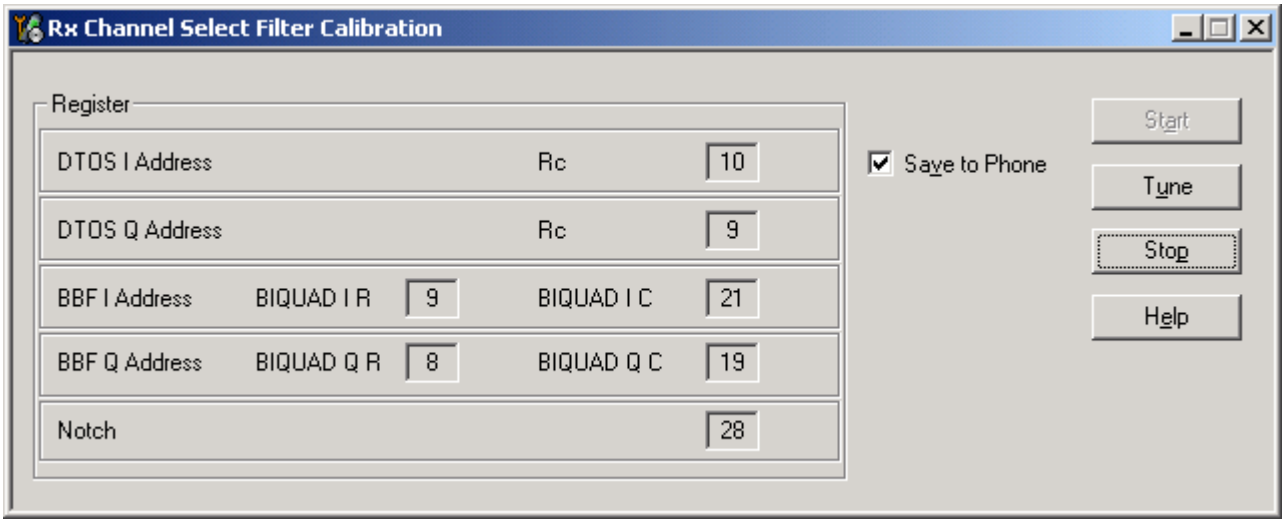
- Extra equipment / external RF signal is not needed.
- Must be done before other Rx calibrations.
- Rx channel select filter is tuned only in one band = single calibration for all bands.

To start calibrating:

1. From the Tuning menu, choose “Rx Channel Select Filter Calibration”.



The “Rx Channel Select Filter Calibration” window appears.



2. If you do not want the values to be saved to phone (e.g. testing), uncheck “Save to Phone”.

“Save to Phone” is checked by default.

3. To start tuning, click Tune.

Tuning values must be 0…31

4. If values shown are within limits, click Stop.

5. To end tuning, close the “Rx Channel Select Filter Calibration” window.

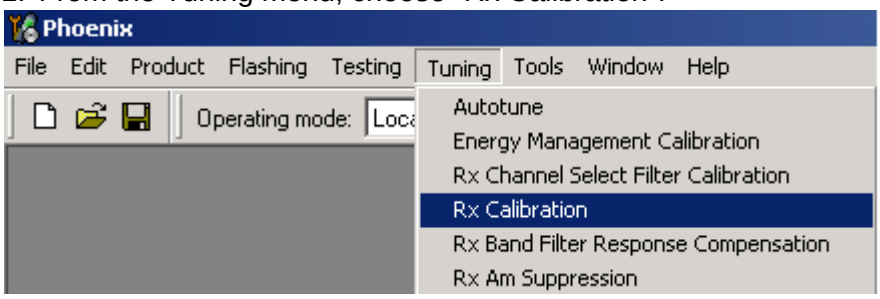
The values are saved to phone.

Rx Calibration

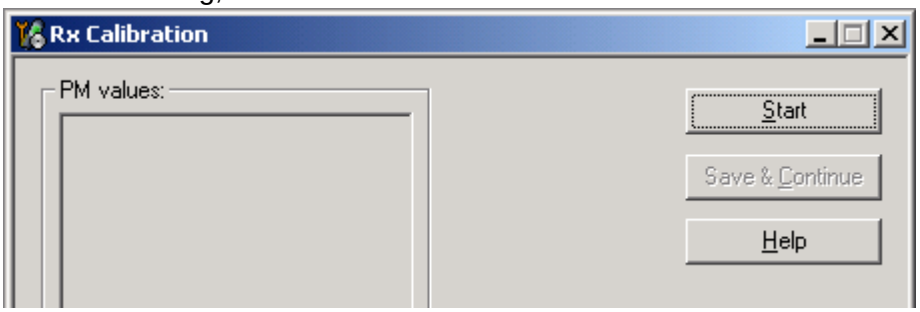
- RF generator is needed.
- This tuning performs Rx calibration.
- Must be done separately on each band.
- Calibration is automatically performed at GSM850/EGSM900 bands, then at the GSM1800 band and finally at the GSM1900 band. If tuning is successful, it continues to the next band.
- AFC tuning is done while GSM850 band Rx calibration is performed.
- Remember to take jig and cable attenuations into account!

To start calibrating at the GSM850 band:

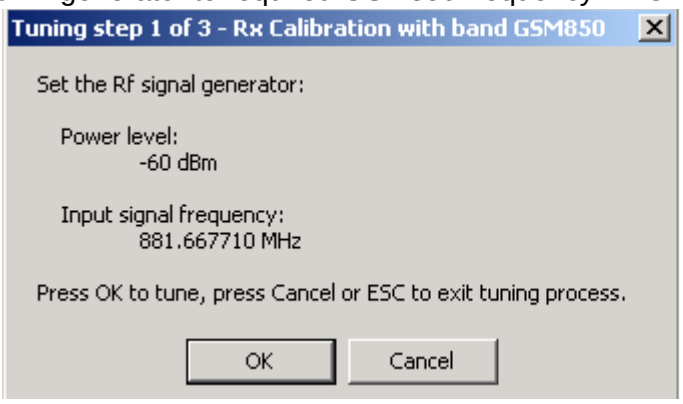
1. From the Tuning menu, choose “Rx Calibration”.



2. To start tuning, click Start



3. Set RF generator to required GSM850 frequency => OK.

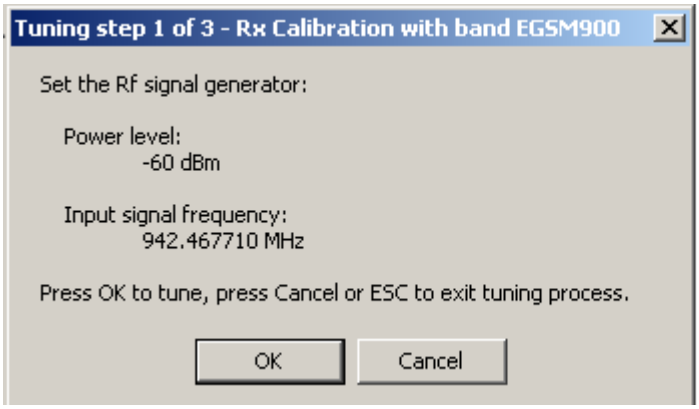


Tuning values and ADC readings are shown.

Table 1: Typical values and limits in GSM850 RX Calibration

GSM850	Typical value	Low limit	High limit
Afc value:	70	-350	350
Afc slope:	135	90	300
Rssi 0:	65	60	70
Rssi 1:	71	66	76
Rssi 2:	77	72	82
Rssi 3:	83	78	88
Rssi 4:	89	84	94
Rssi 5:	94	89	99
Rssi 6:	100	95	105
Rssi 7:	106	101	111
Rssi 8:	112	107	117
Rssi 9:	118	113	123
Rssi 10:	124	119	129
Rssi 11:	130	125	135
Rssi 12:	136	131	141
Rssi 13:	142	137	147
Rssi 14:	148	143	153

4. Set RF generator to required EGSM900 frequency => OK.

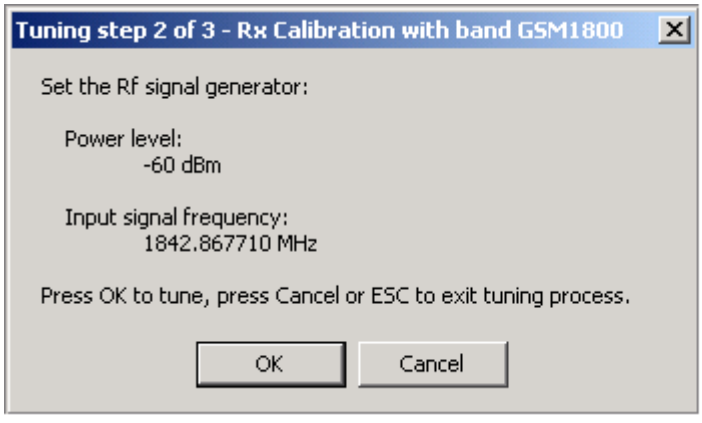


Tuning values and ADC readings are shown.

Table 2: Typical values and limits in GSM900 Rx Calibration

GSM900	Typical value	Low limit	High limit
Afc slope:	135	90	300
Rssi 0:	67	62	72
Rssi 1:	73	68	78
Rssi 2:	79	74	84
Rssi 3:	85	80	90
Rssi 4:	91	86	96
Rssi 5:	96	91	101
Rssi 6:	102	97	107
Rssi 7:	108	103	113
Rssi 8:	114	109	119
Rssi 9:	120	115	125
Rssi 10:	126	121	131
Rssi 11:	132	127	137
Rssi 12:	138	133	143
Rssi 13:	144	139	149
Rssi 14:	150	145	155
Afc slope:	135	90	300

5. Set RF generator to required GSM1800 frequency => OK.

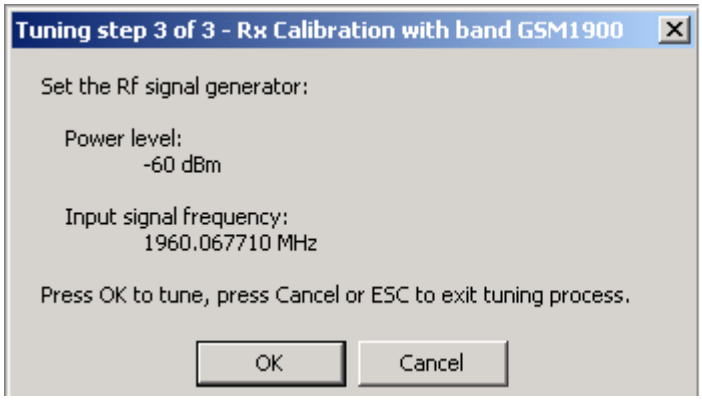


Tuning values and ADC readings are shown.

Table 3: Typical values and limits in (GSM1800) Rx Calibration

GSM1800	Typical value	Low limit	High limit
Rssi 0:	65	60	70
Rssi 1:	71	66	76
Rssi 2:	77	72	82
Rssi 3:	83	78	88
Rssi 4:	89	84	94
Rssi 5:	95	90	100
Rssi 6:	101	96	106
Rssi 7:	107	102	112
Rssi 8:	113	108	118
Rssi 9:	119	114	124
Rssi 10:	125	120	130
Rssi 11:	131	126	136
Rssi 12:	137	132	142
Rssi 13:	143	138	148
Rssi 14:	149	144	154

6. Set the RF generator to required GSM1900 frequency => OK.



Tuning values and ADC readings are shown.

Table 4: Typical values and limits in (GSM1900) Rx Calibration

GSM1900	Typical value	Low limit	High limit
Rssi 0:	66	61	71
Rssi 1:	72	67	77

GSM1900	Typical value	Low limit	High limit
Rssi 2:	78	73	83
Rssi 3:	84	79	89
Rssi 4:	90	85	95
Rssi 5:	94	89	99
Rssi 6:	100	95	105
Rssi 7:	106	101	111
Rssi 8:	112	107	117
Rssi 9:	118	113	123
Rssi 10:	124	119	129
Rssi 11:	130	125	135
Rssi 12:	136	131	141
Rssi 13:	142	137	147
Rssi 14:	148	143	153

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

7. To end tuning, close the “Rx Calibration” window.

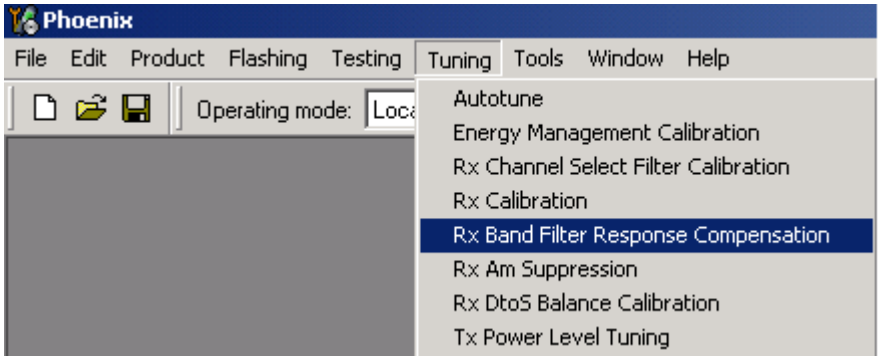
RX Band Filter Response Compensation

- RF generator is needed.
- This operation must be done separately on each band!
- Start Rx Calibration at GSM850/EGSM900 bands, then continue at the GSM1800 band and finally at the GSM1900 band

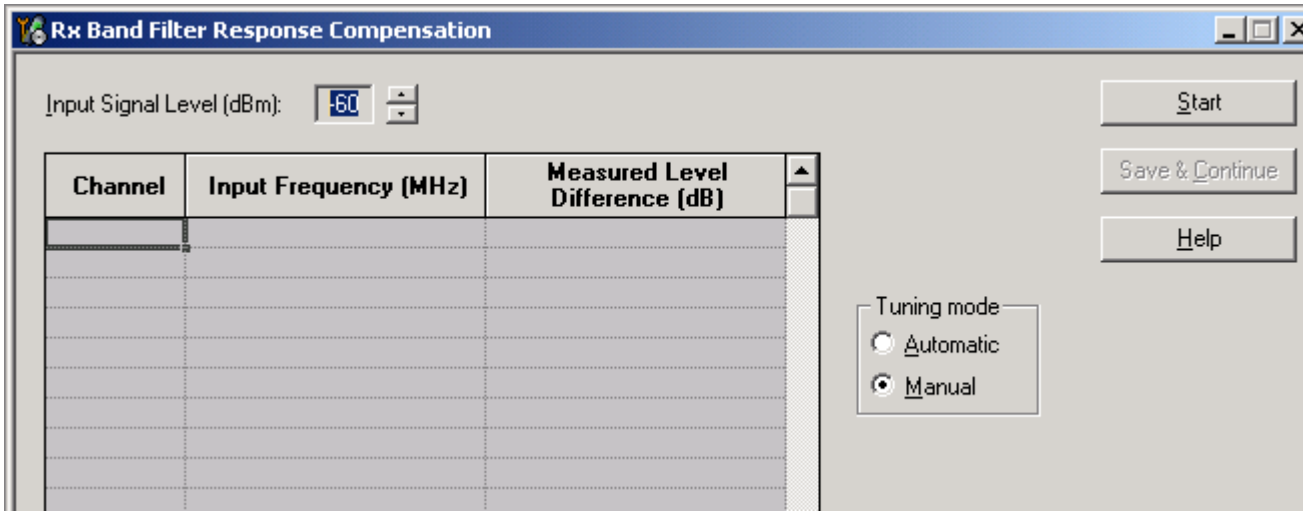
NOTE! Remember to do Rx Calibration before doing Rx Band Filter Response Compensation and remember to take jig and cable attenuations into account!

To start tuning:

1. From the Tuning menu, choose “Rx Band Filter Response Compensation”.



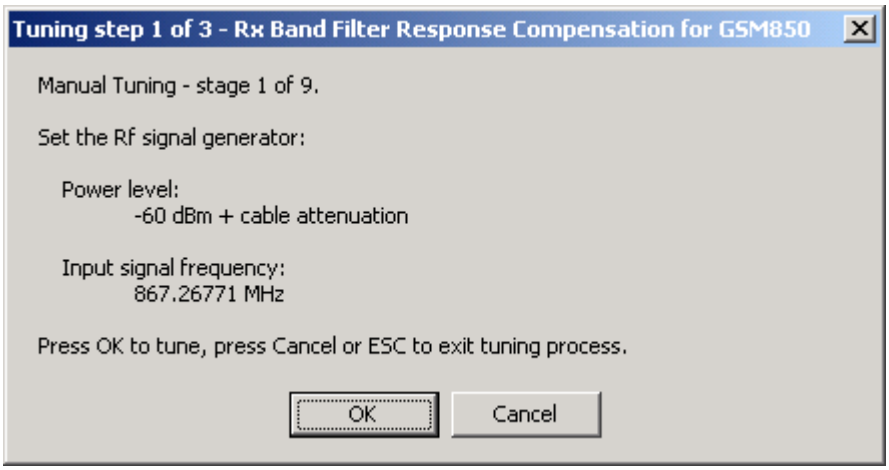
2. Select Manual Tuning mode and click Start.



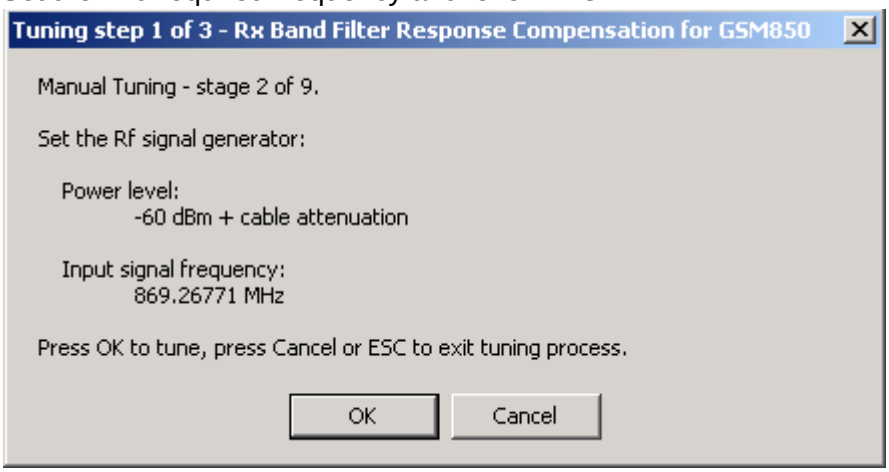
You are asked to supply 9 different RF frequencies to the phone.

The tuning begins from the GSM850/EGSM900 band and continues the same way for GSM1800 and GSM1900 bands

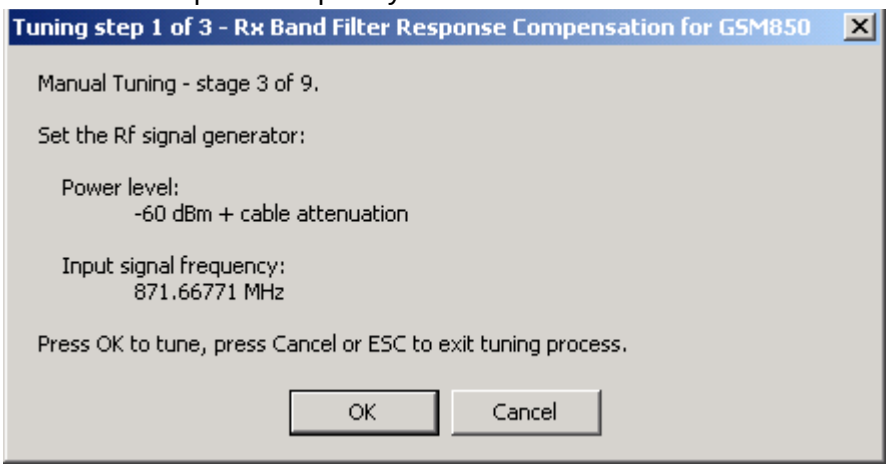
3. Set the first required frequency (GSM850) and level => OK.



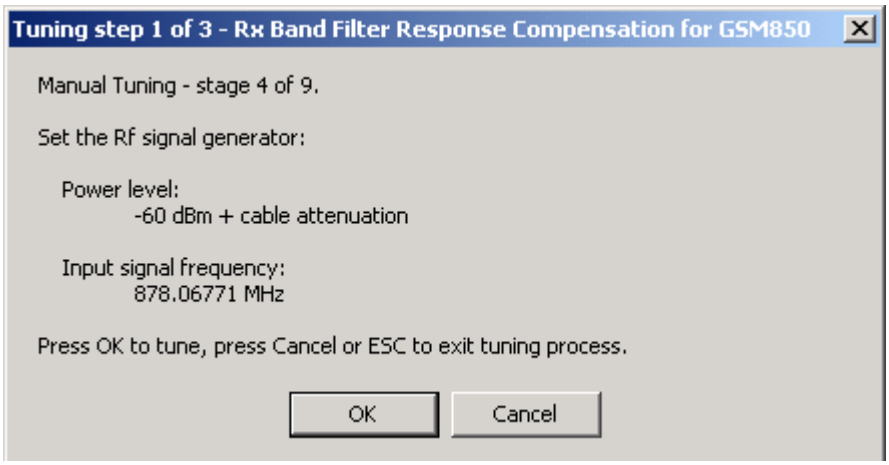
4. Set the 2nd required frequency and level => OK.



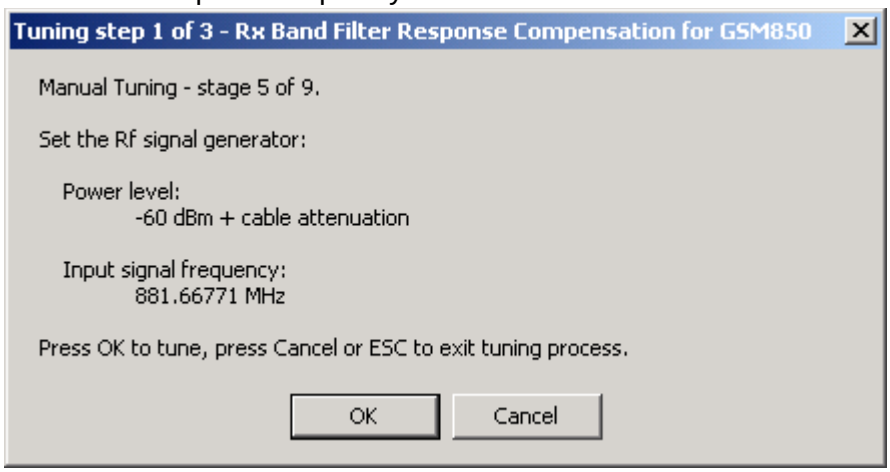
5. Set the 3rd required frequency and level => OK.



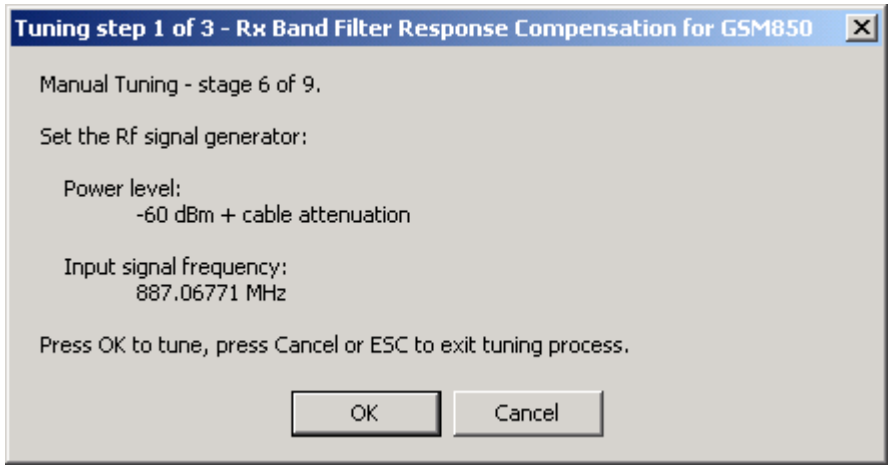
6. Set the 4th required frequency and level => OK.



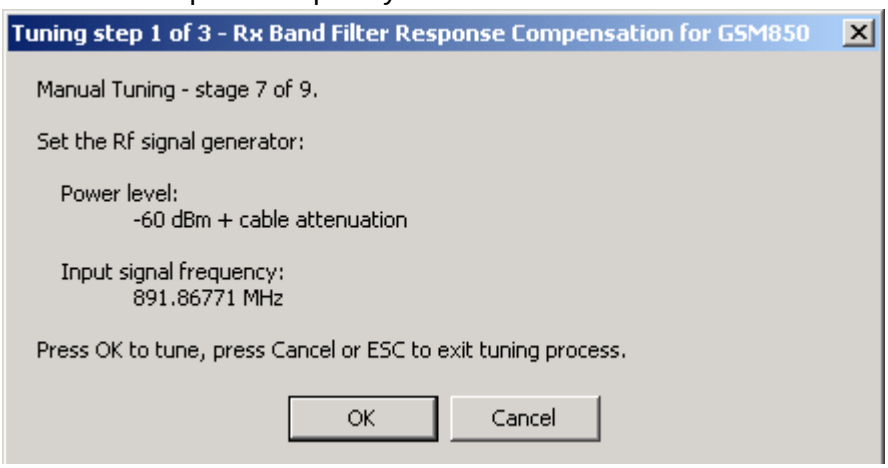
7. Set the 5th required frequency and level => OK.



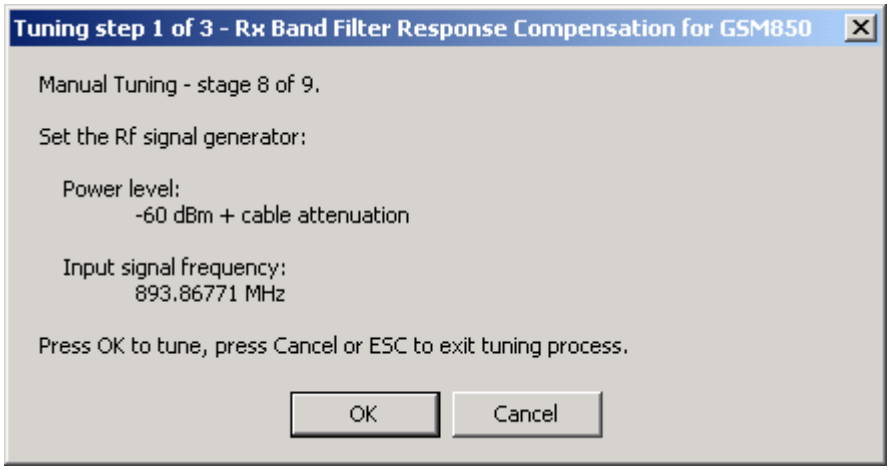
8. Set the 6th required frequency and level => OK.



9. Set the 7th required frequency and level => OK.



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



11. Set 9th required frequency and level => OK.

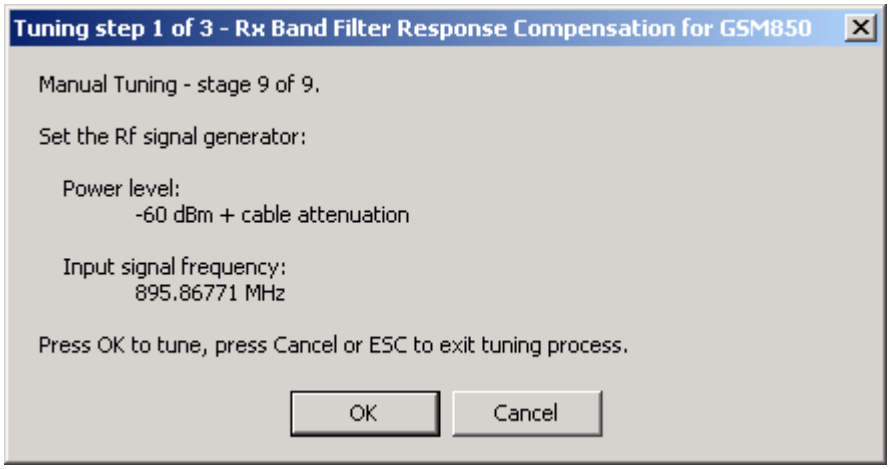
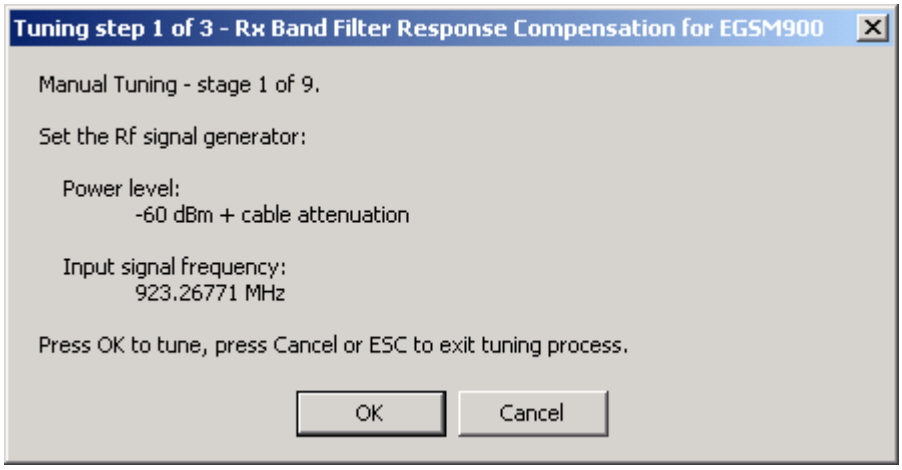


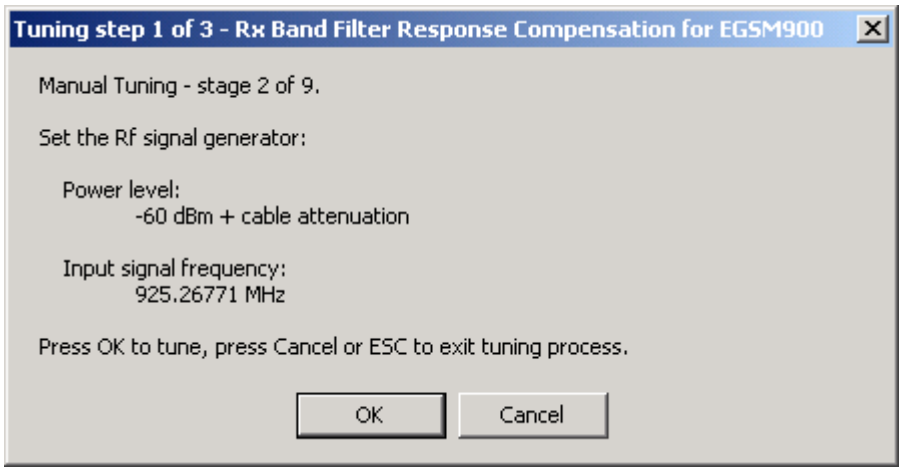
Table 5: Typical values and limits in Rx Band Filter Response Compensation (GSM850):

Channel	Input Frequency (MHz)	Typical value	Low limit (dB)	High limit (dB)
118	863.26771	-0.44	-10	3.5
128	869.26771	-0.53	-3.5	3.5
140	871.66771	-0.36	-3.5	3.5
172	878.06771	0.50	-3.5	3.5
190	881.66771	-0.08	-3.5	3.5
217	887.06771	0.28	-3.5	3.5
241	891.86771	0.14	-3.5	3.5
251	893.86771	0.15	-3.5	3.5
261	895.86771	-0.03	-10	3.5

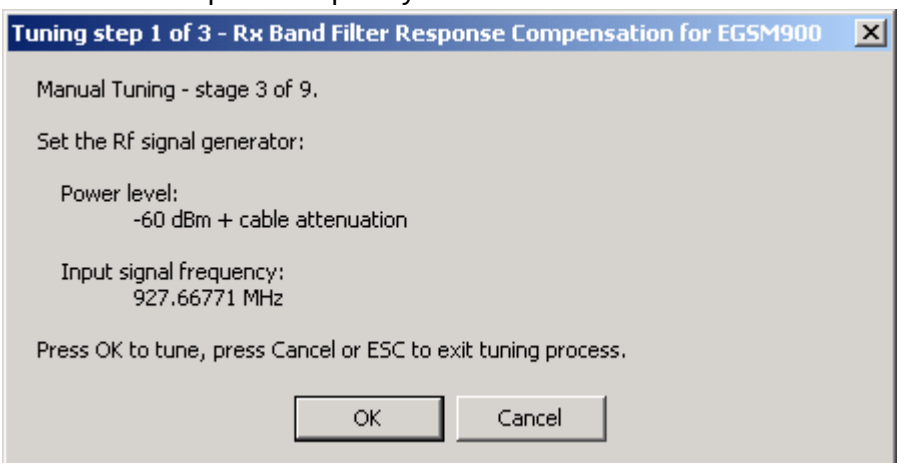
12.Set the first required frequency (EGSM900) and level => OK.



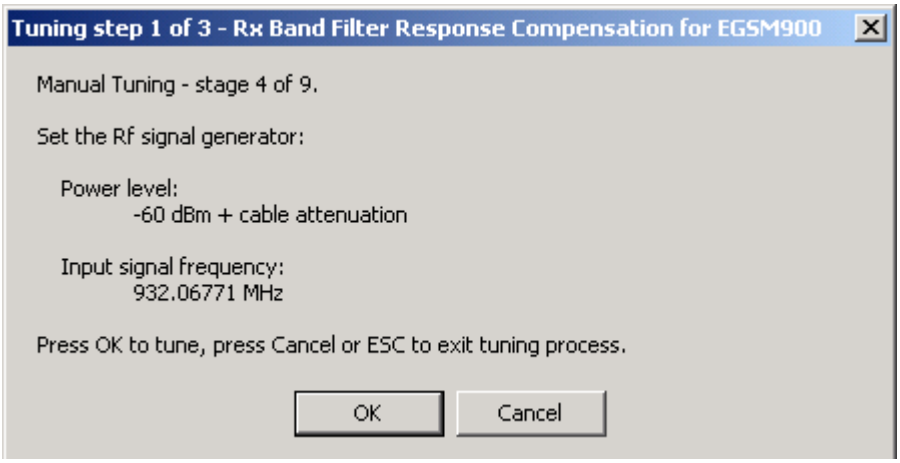
13.Set the 2nd required frequency and level => OK.



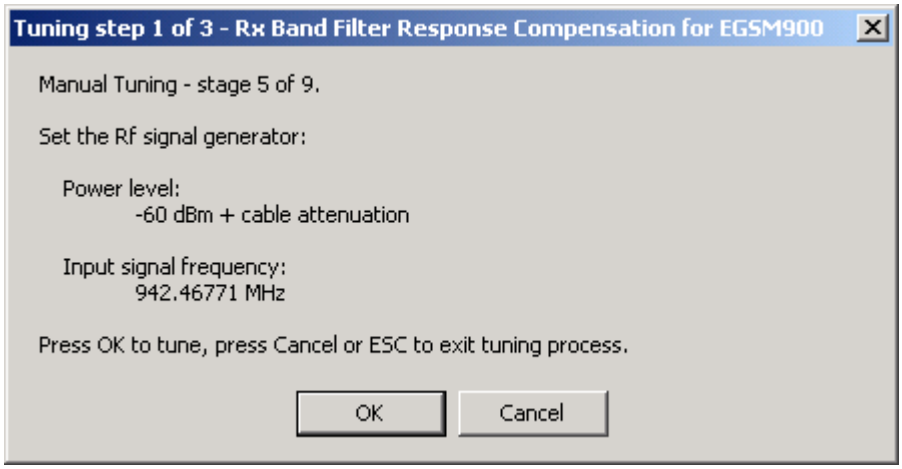
14.Set the 3rd required frequency and level => OK.



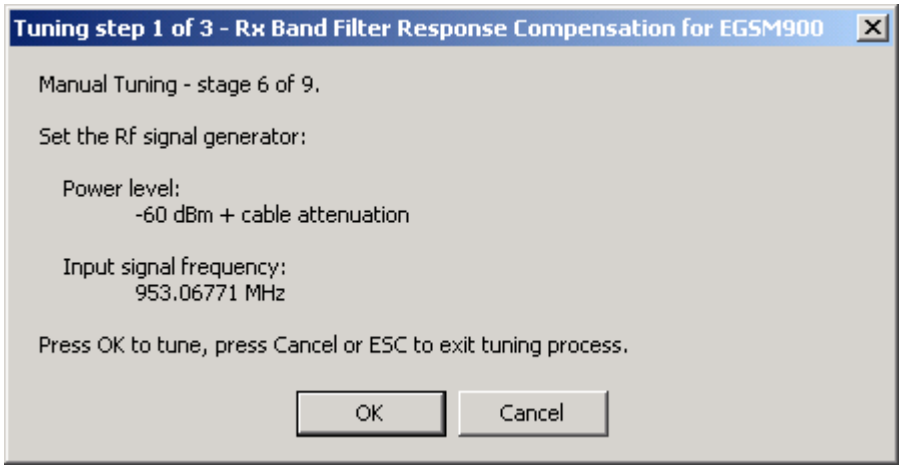
15.Set the 4th required frequency and level => OK.



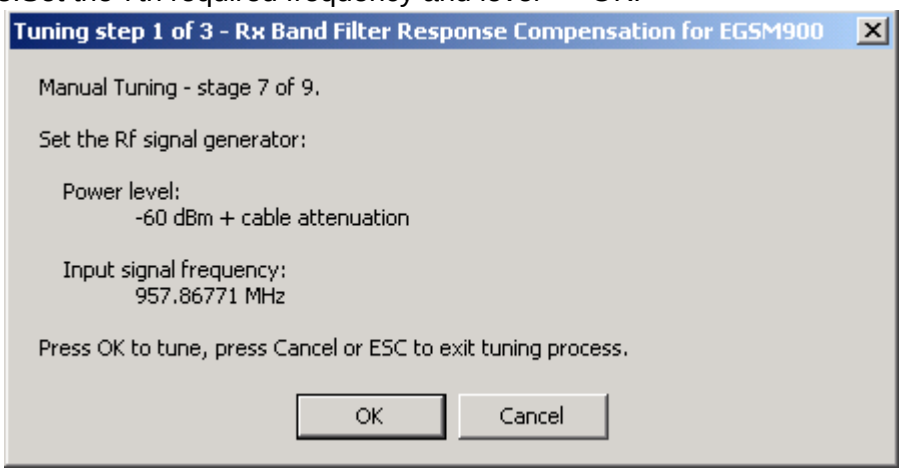
16.Set the 5th required frequency and level => OK.



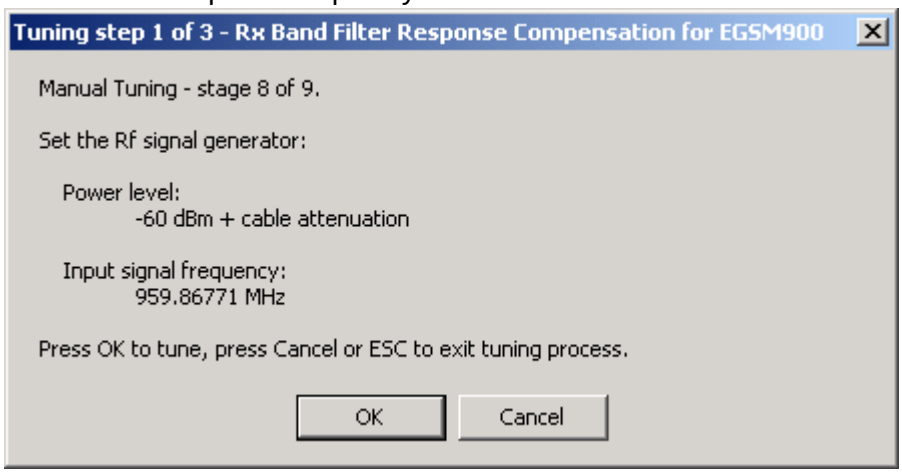
17.Set the 6th required frequency and level => OK.



18.Set the 7th required frequency and level => OK.



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



20.Set 9th required frequency and level => OK.

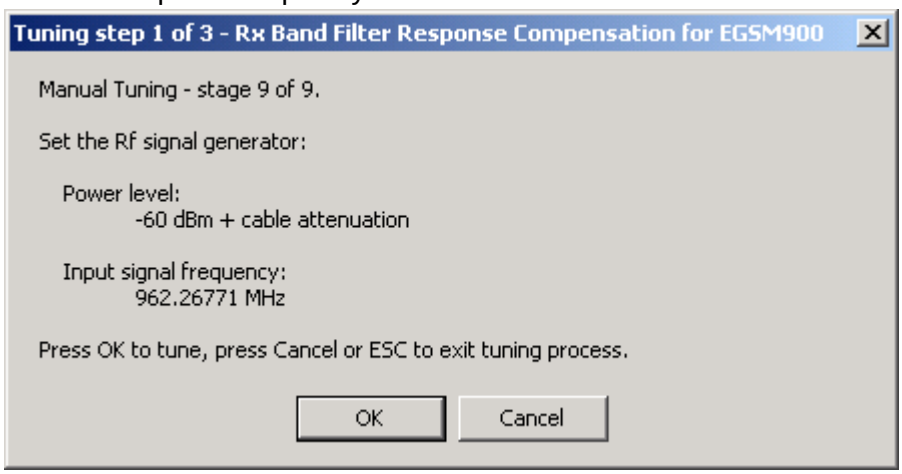
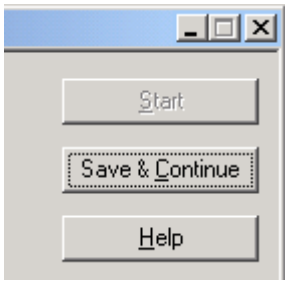


Table 6: Typical values and limits in Rx Band Filter Response Compensation (GSM900):

Channel	Input Frequency (MHz)	Typical value	Low limit (dB)	High limit (dB)
965	923.26771	-1.70	-10	3.5
975	925.26771	-1.01	-3.5	3.5
987	927.66771	-0.45	-3.5	3.5
1009	932.06771	-0.52	-3.5	3.5
37	924.46771	-0.02	-3.5	3.5
90	953.06771	-0.24	-3.5	3.5
114	957.86771	-0.61	-3.5	3.5
124	959.86771	-0.77	-3.5	3.5
136	962.26771	-1.20	-10	3.5

21.If the values shown are within limits, click “Save & Continue” to save values to the phone.



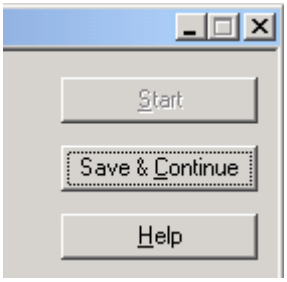
Continue tuning from GSM1800

22.Repeat the same steps as for the GSM850/EGSM900 bands above.

Table 7: Typical values and limits in Rx Band Filter Response Compensation (GSM1800):

Channel	Input Frequency (MHz)	Typical value	Low limit (dB)	High limit (dB)
497	1802.26771	-1.95	-10	3.5
512	1805.26771	-1.20	-3.5	3.5
535	1809.86771	-0.49	-3.5	3.5
606	1824.06771	0.09	-3.5	3.5
700	1842.86771	-0.02	-3.5	3.5
791	1861.06771	-0.33	-3.5	3.5
870	1876.86771	-0.44	-3.5	3.5
885	1879.86771	-0.64	-3.5	3.5
908	1884.46771	-1.22	-10	3.5

23.If the values shown are within limits, click “Save & Continue” to save values to the phone.



Continue tuning from GSM1900

24. Repeat the same steps as for the GSM850/EGSM900 and GSM1800 bands above.

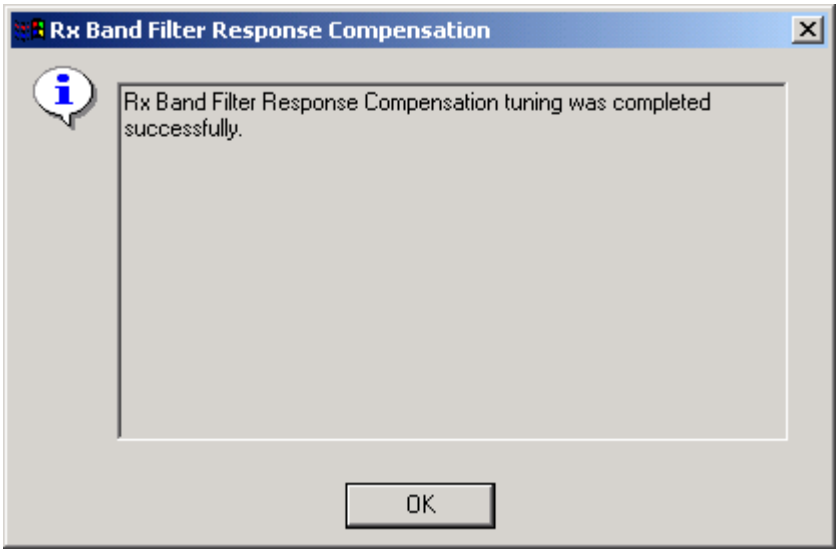
Table 8: Typical values and limits in Rx Band Filter Response Compensation (GSM1900):

Channel	Input Frequency (MHz)	Typical value	Low limit (dB)	High limit (dB)
496	1927.06771	-1.57	-10	3.5
512	1930.26771	-1.24	-3.5	3.5
537	1935.26771	-0.84	-3.5	3.5

Channel	Input Frequency (MHz)	Typical value	Low limit (dB)	High limit (dB)
586	1945.06771	-0.77	-3.5	3.5
661	1960.06771	-0.03	-3.5	3.5
736	1975.06771	-0.52	-3.5	3.5
794	1986.66771	-1.41	-3.5	3.5
810	1989.86771	-1.33	-3.5	3.5
835	1994.86771	-2.34	-10	3.5

25.If the values shown are within limits, click “Save & Continue” to save values to the phone.

26.To end tuning, click OK and close the “Rx Band Filter Response Compensation” window.

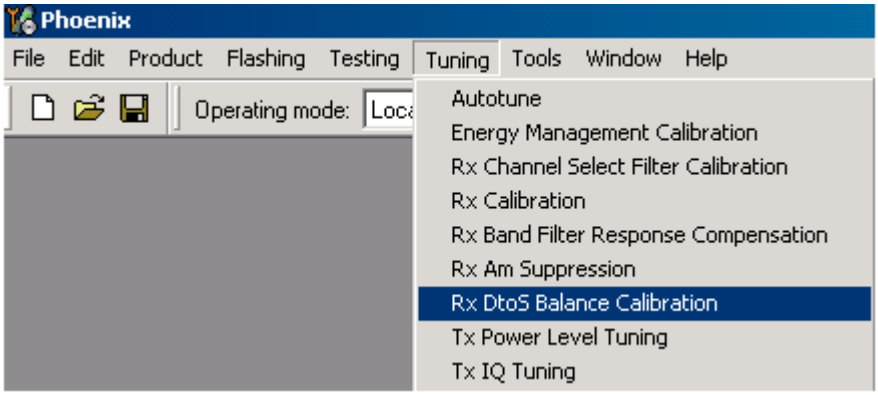


Rx DtoS balance calibration

- Rx DtoS balance calibration is used for calibrating DSP control word values.
- Calibration must be done separately on each band.
- Start Rx DtoS balance calibration at GSM850/EGSM900, then continue at GSM1800 band and finally at the GSM1900 band.
- Remember to take jig and cable attenuations into account!

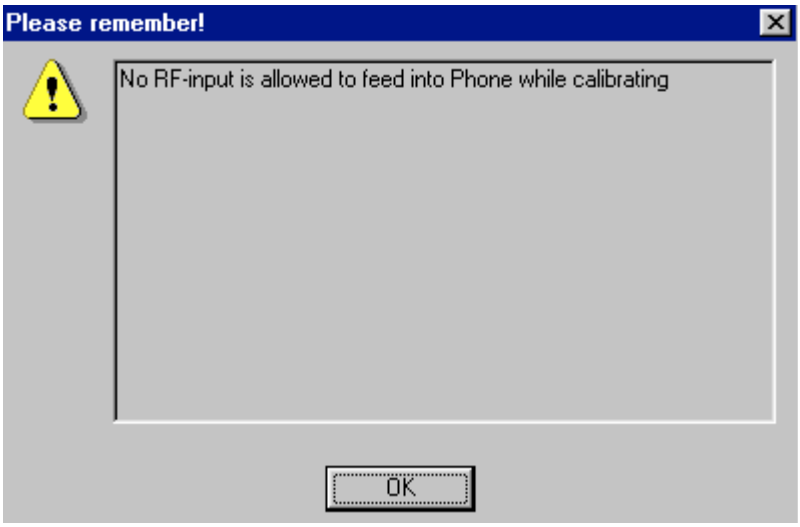
To start Rx DtoS balance calibration:

1. From the Tuning menu, choose “Rx DtoS Balance Calibration”..

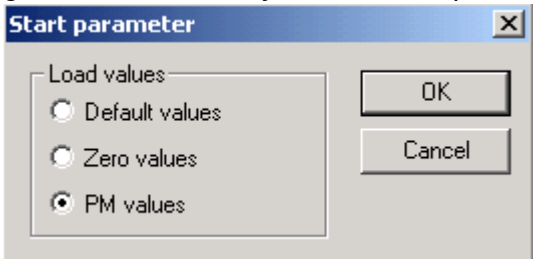


2. Click OK and Start.

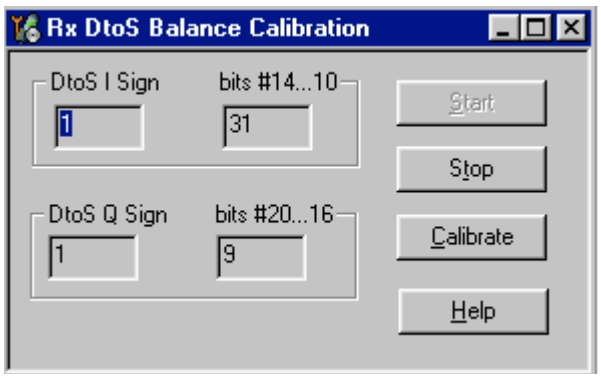
Tuning begins automatically at the GSM850 band.



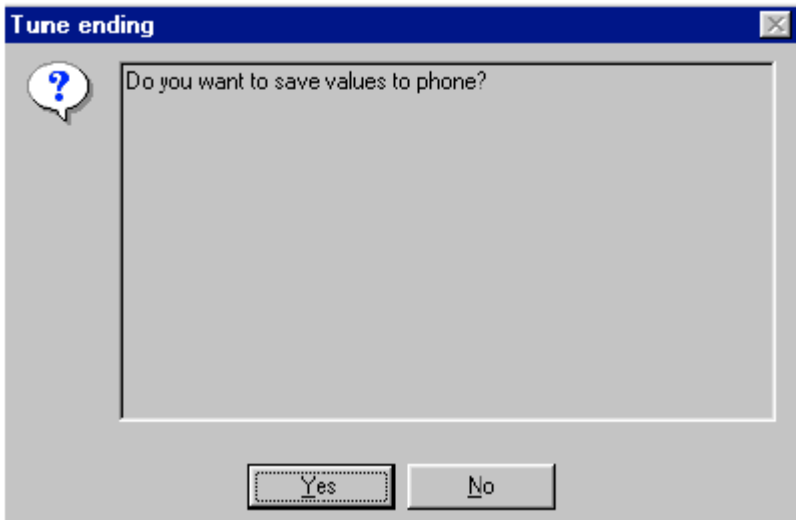
3. To start tuning with values already saved to the phone, click OK.



4. Click Calibrate.

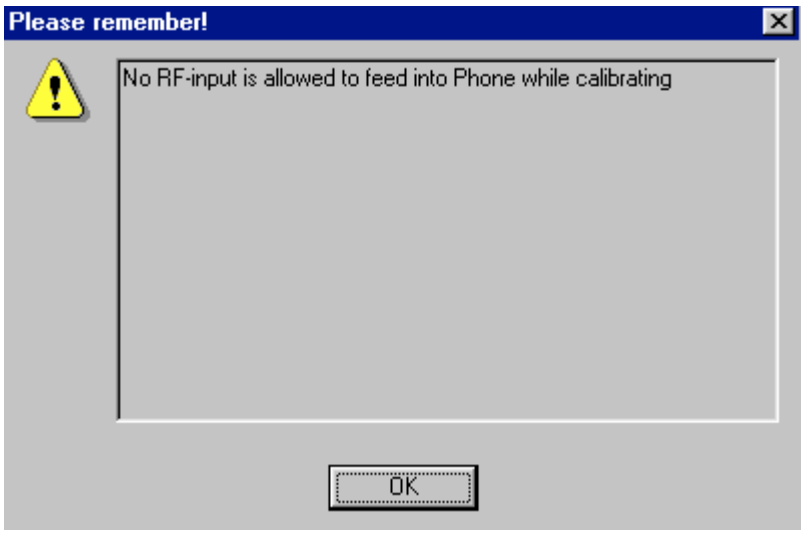


5. If values shown are within limits, click Stop.
6. To save values to the phone, click Yes.

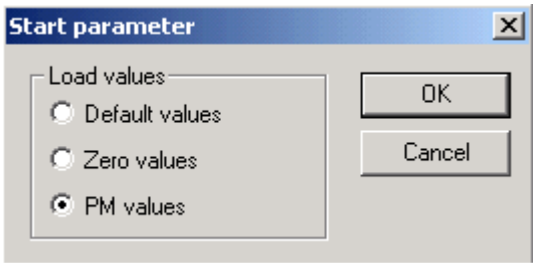


7. From the Tuning menu, choose “Rx DtoS Balance Calibration”.
8. Click OK and Start.

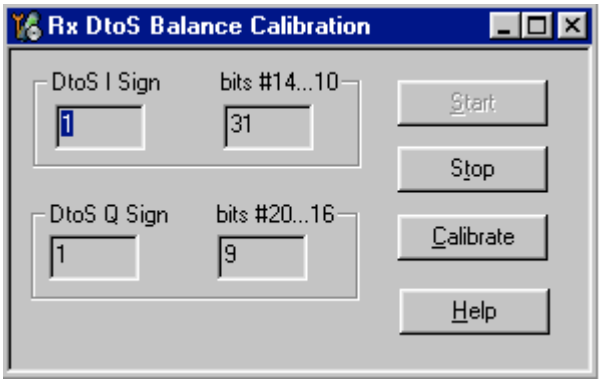
Tuning begins automatically at the GSM900 band.



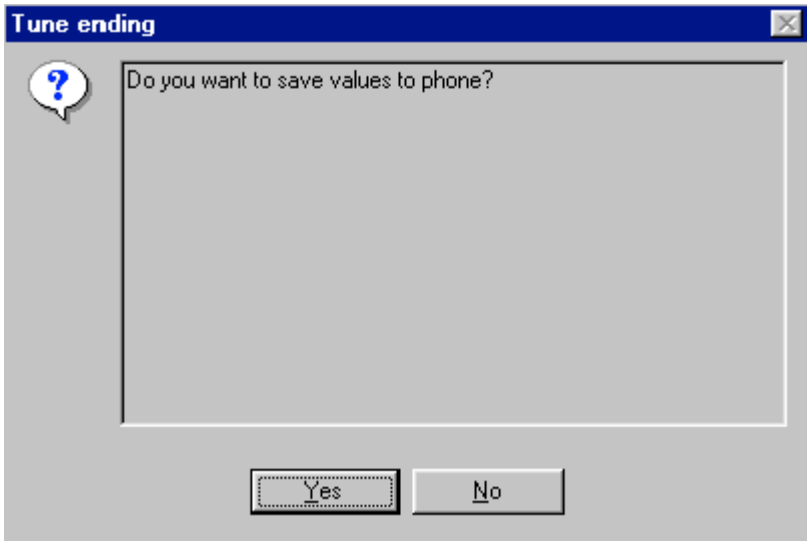
9. To start tuning with values already saved to the phone, click OK.



10. Click Calibrate.



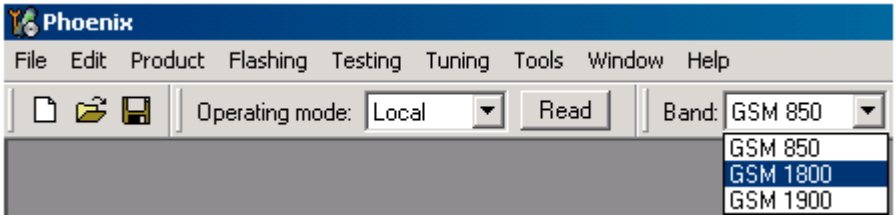
11.If values shown are within limits, click Stop..



12.To save values to the phone, click Yes.

Continue tuning from GSM1800 band

13.From the Band dropdown menu, choose the correct band.



14.Repeat the same steps as for the GSM850/EGSM900 bands.

15.If values shown are within limits, click Yes to save values to the phone.

Continue tuning from GSM1900 band

16.Repeat the same steps as for the GSM850/EGSM900 and GSM1800 bands.

17.From the Band dropdown menu, choose the correct band.

18.If values shown are within limits, click Yes to save values to the phone.

19.To end receiver tuning, close the “Rx DtoS Balance Calibration” window.

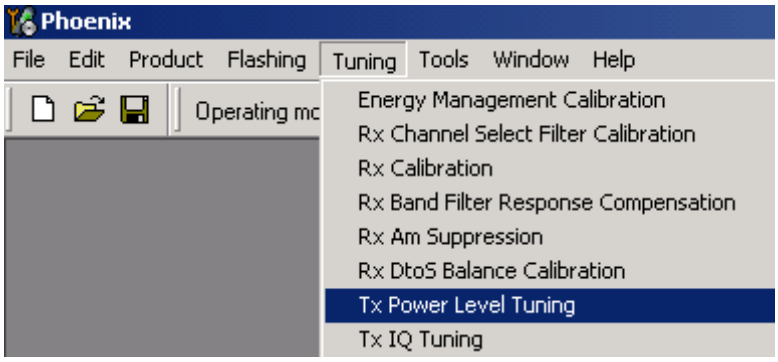
Transmitter Manual Tuning

Tx Power Level Tuning

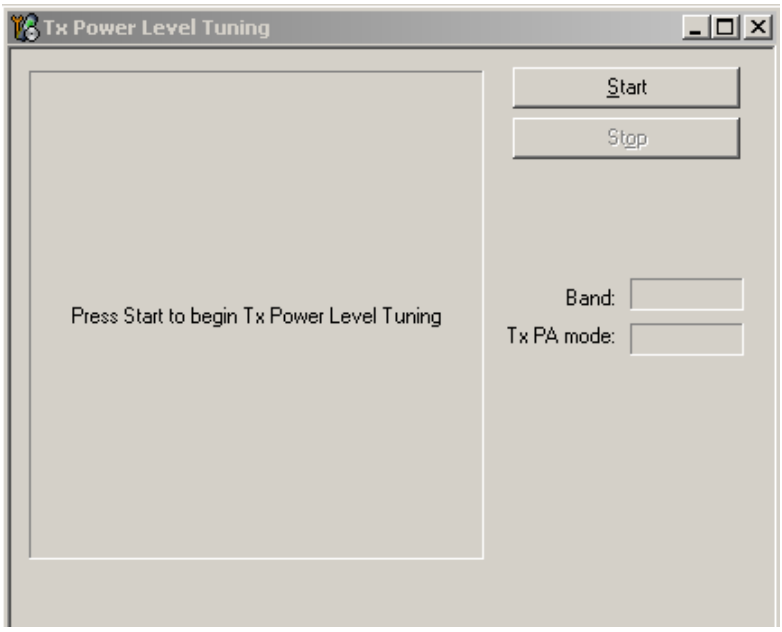
- Power meter or spectrum analyzer is needed.
- With Tx Power Level Tuning, the coefficients are adjusted for each power level.
- Start power level tuning at GSM850, GSM900/EDGE, then continue at GSM1800/EDGE band and finally at the GSM1900/EDGE band.

To start Tx power level tuning at the GSM850 band:

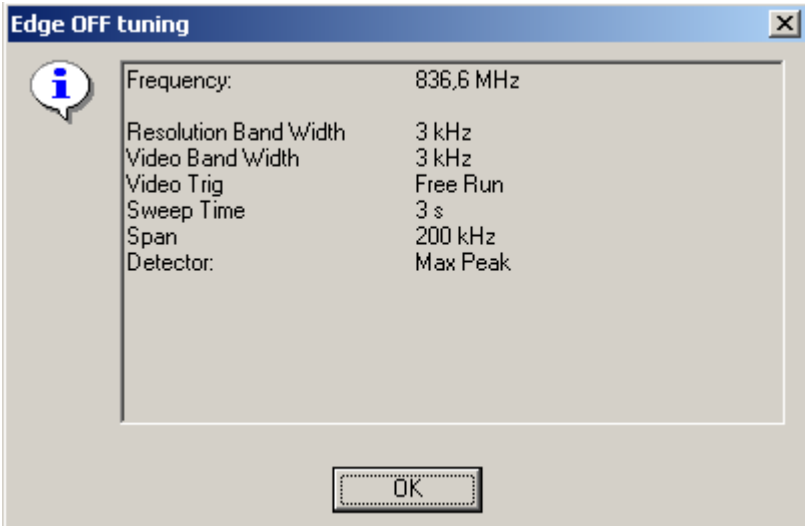
1. From the Tuning menu, choose “Tx Power Level Tuning”.



2. Click Start.



3. Set up spectrum analyzer accordingly.
Remember to take the jig and cable attenuations into account!



The coefficient table lists the power level, coefficient, target dBm and DAC value for each power level.

4. To choose the tuned power level, use up and down arrows or mouse.

The current power level is shown with inverse colours.

The tuning value can be adjusted with “-“ and “+” keys.

5. Tune Base level and power levels 19, 15 and 5 to target level.

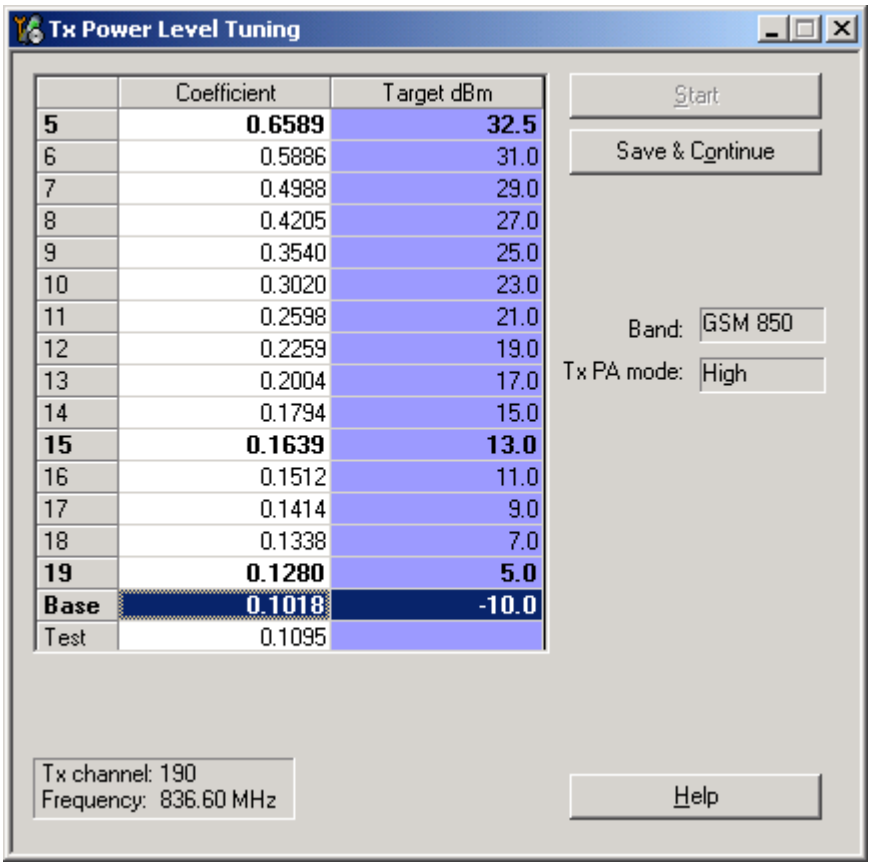


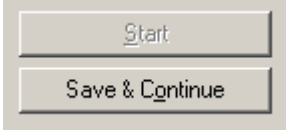
Table 9: Typical values: GSM850

Power level	Coefficient Typical value
5	0,65
15	0,16
19	0,12
Base	0,10

Note! 'Typical values' above are shown as a guideline only. Slight variation from unit to unit is normal.'

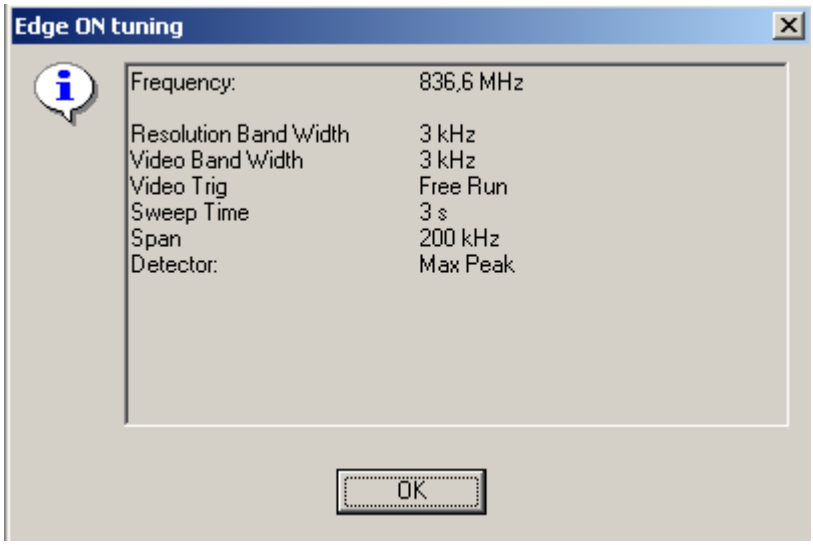
6. Click Save & Continue.

Tuning values are calculated and saved to phone's memory.

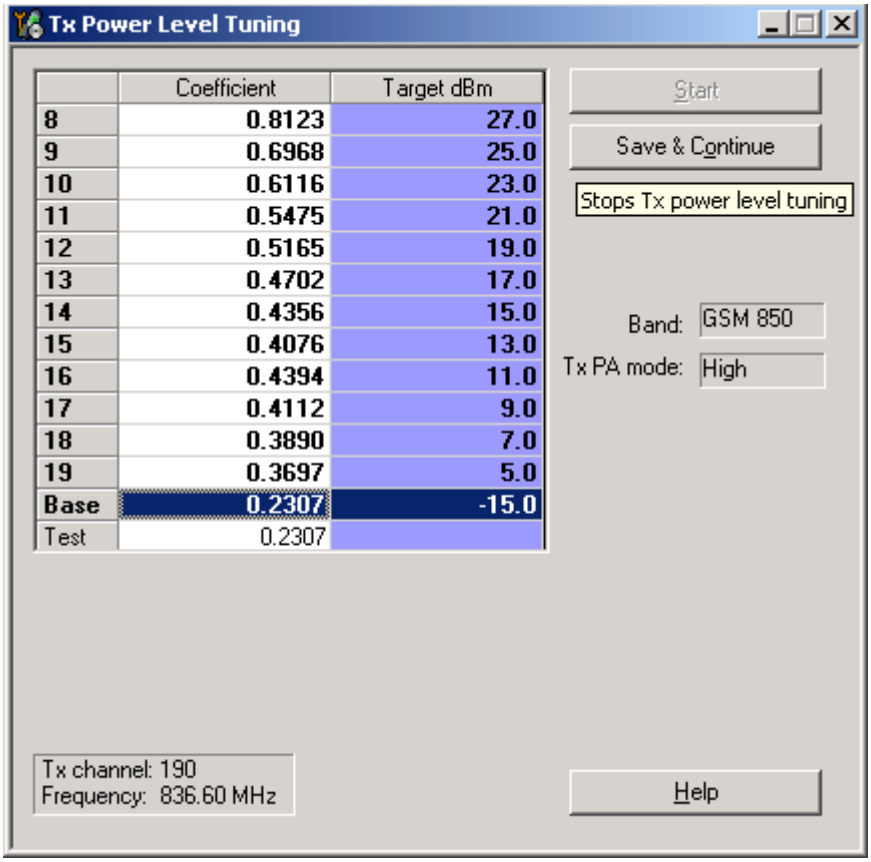


Tuning continues at EDGE850

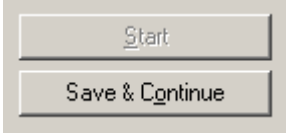
7. Set up spectrum analyzer accordingly.



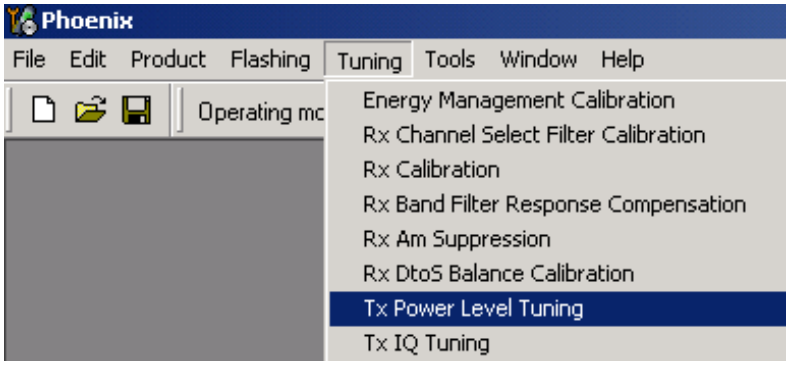
8. To start tuning, click OK.
9. Tune all power levels to target level.



10. To save the tuning values to phone's memory, click Save & Continue.

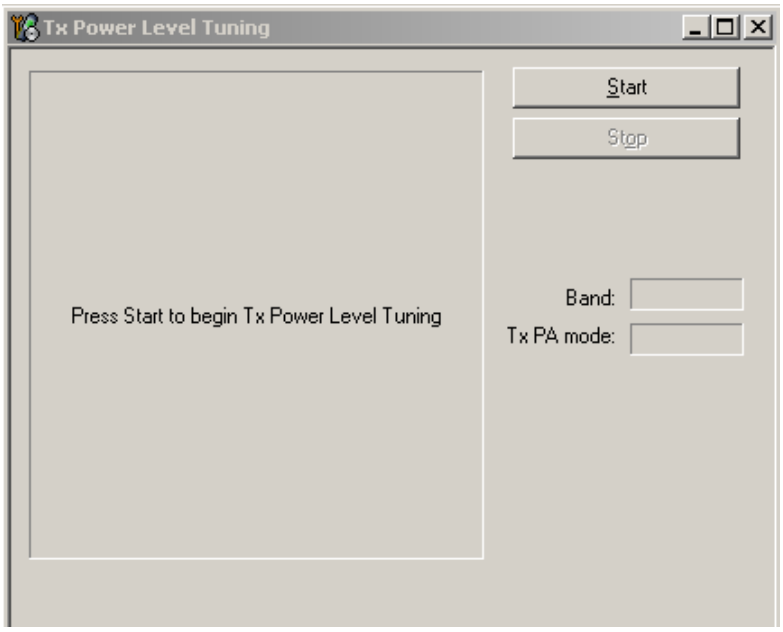


11.From the Tuning menu, choose Tx Power Level Tuning (EGSM900).

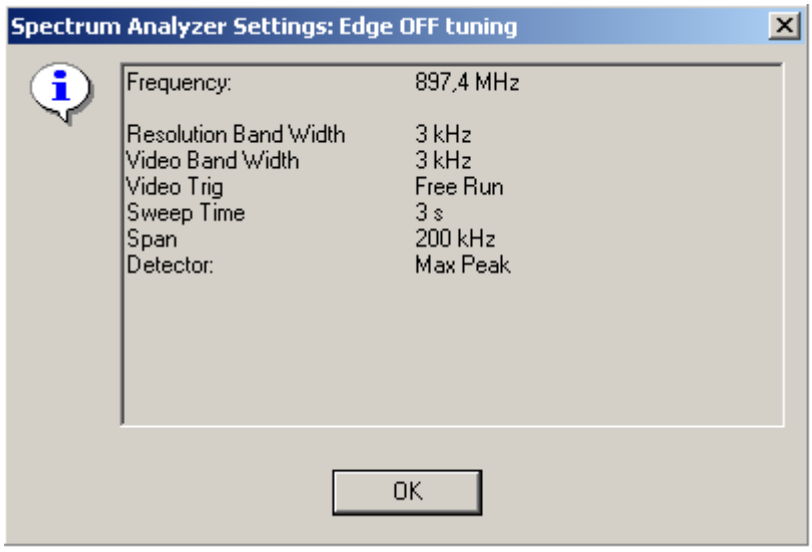


12.Click Start.

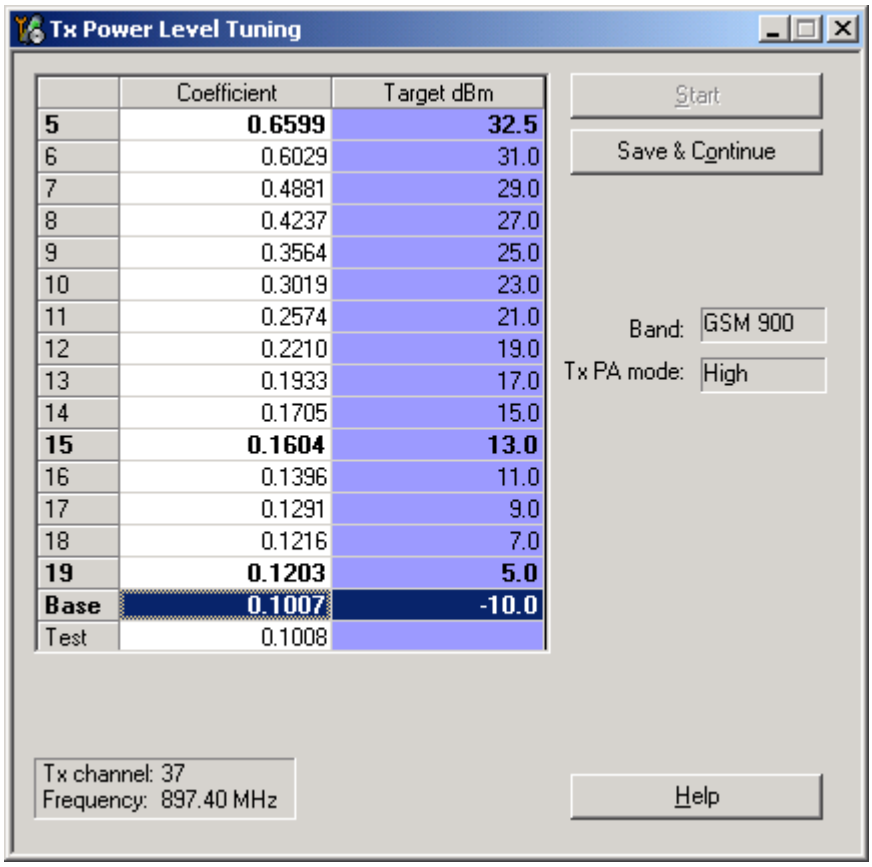
Tuning begins at the GSM900 band.



13.Set up spectrum analyzer accordingly.
Remember to take the jig and cable attenuations into account!



The coefficient table lists the power level, coefficient, target dBm and DAC value for each power level.



14.To choose the tuned power level, use up and down arrows or mouse.

The current power level is shown with inverse colours.

The tuning value can be adjusted with “-“ and “+” keys.

15.Tune Base level and power levels 19, 15 and 5 to target level.

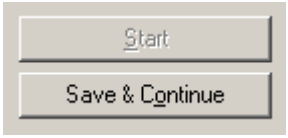
Table 10: Typical values: GSM900

Power level	Coefficient Typical value
5	0,65
15	0,16
19	0,12
Base	0,10

Note! ‘Typical values’ above are shown as a guideline only. Slight variation from unit to unit is normal.

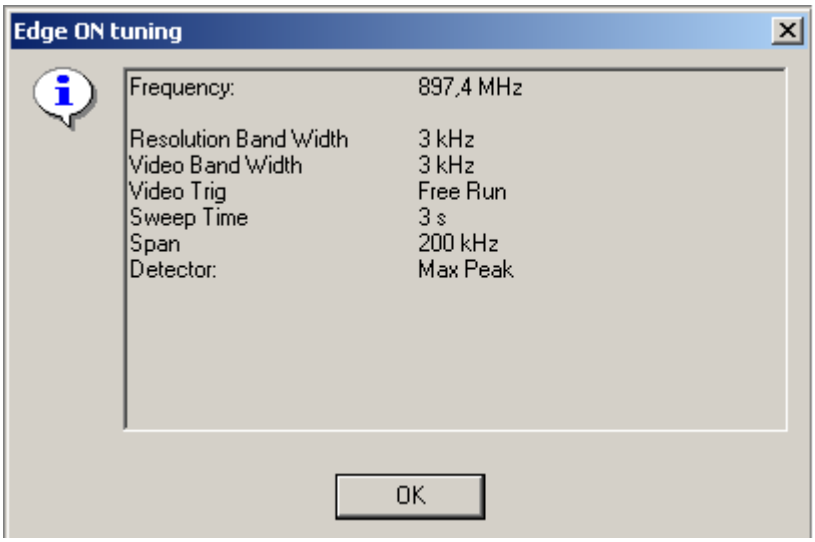
16.Click Save & Continue.

Tuning values are calculated and saved to phone's memory.



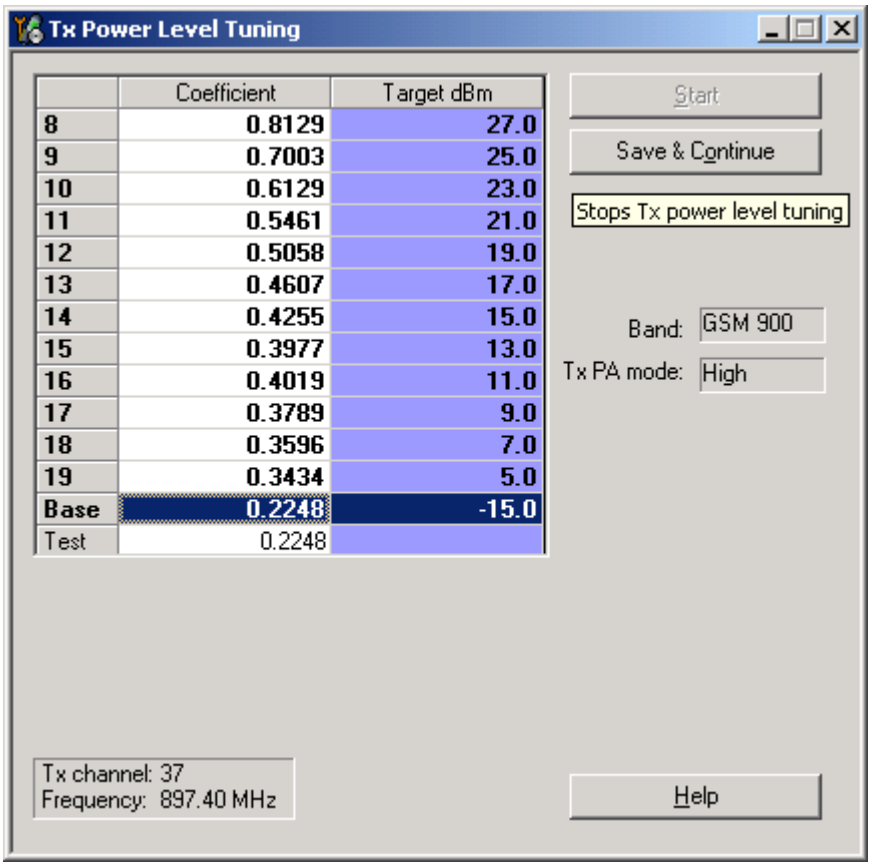
Tuning continues at EDGE900

17.Set up spectrum analyzer accordingly.

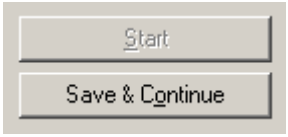


18.To start tuning, click OK.

19.Tune all power levels to target level.



20. To save the tuning values to phone's memory, click Save & Continue.

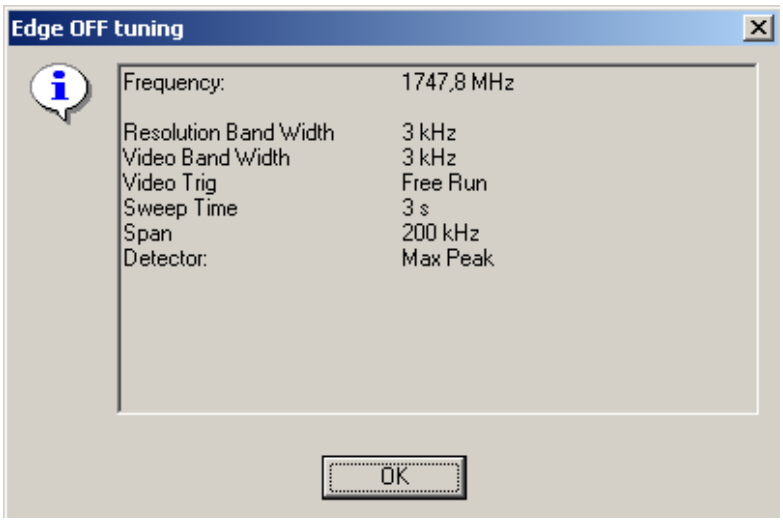


Tuning continues at GSM1800 band

21.Set up spectrum analyzer accordingly.

Remember to take the jig and cable attenuations into account!

22.Click OK.



23..Tune Base level and power levels 15,11 and 0 to target level.

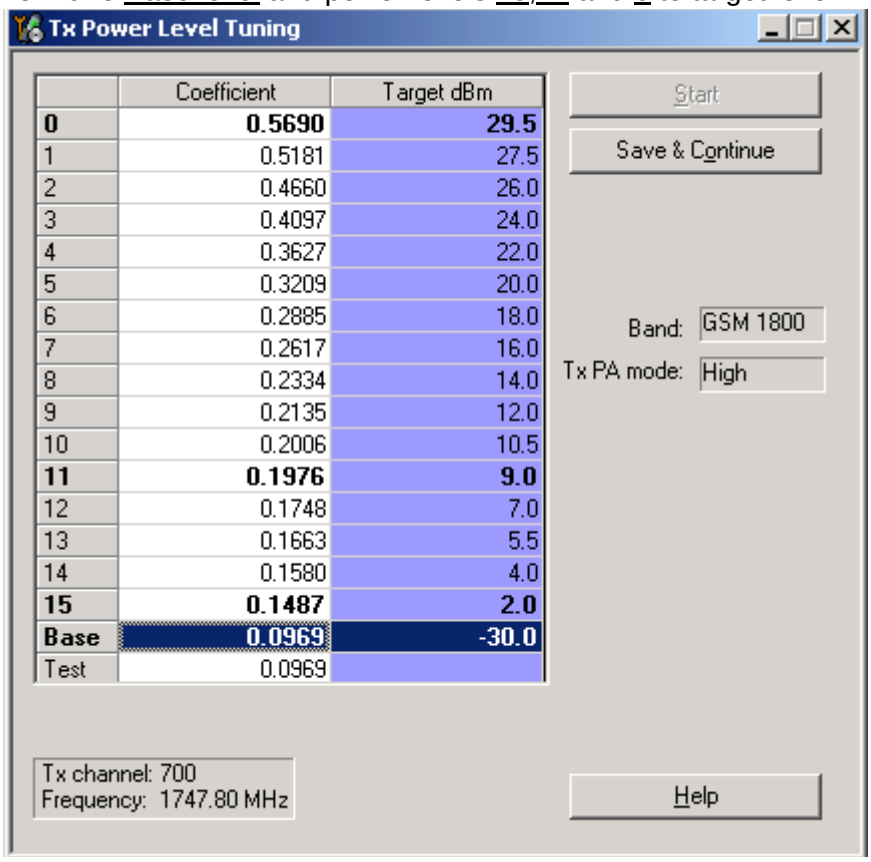


Table 11: Typical values GSM1800

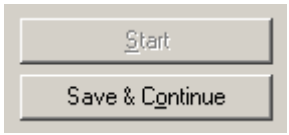
Power level	Coefficient Typical value
0	0,56
11	0,20

Power level	Coefficient Typical value
15	0,15
Base	0,10

Note! 'Typical values' above are shown as a guideline only. Slight variation from unit to unit is normal.

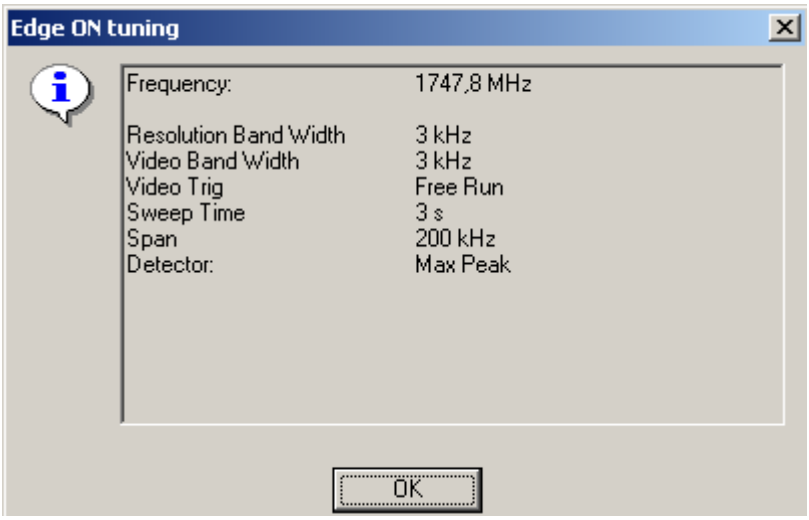
24.Click Save & Continue.

Tuning values are calculated and saved to phone's memory.



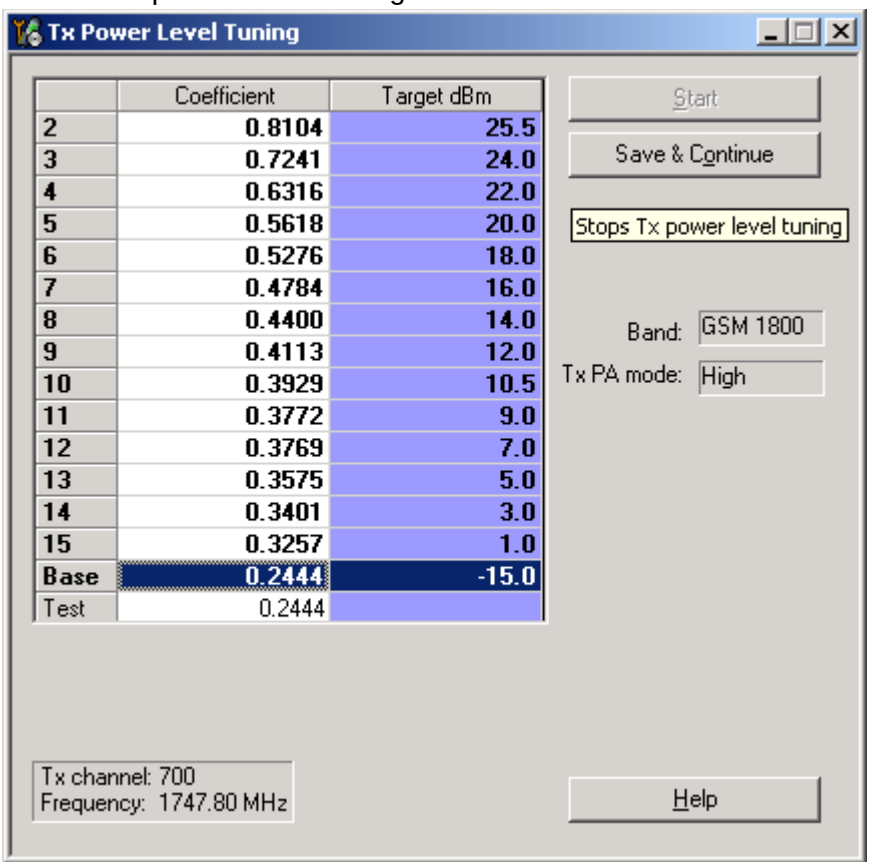
Tuning continues at EDGE1800

25.Set up spectrum analyzer accordingly.

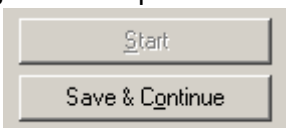


26.Click OK.

27.Tune all power levels to target level.



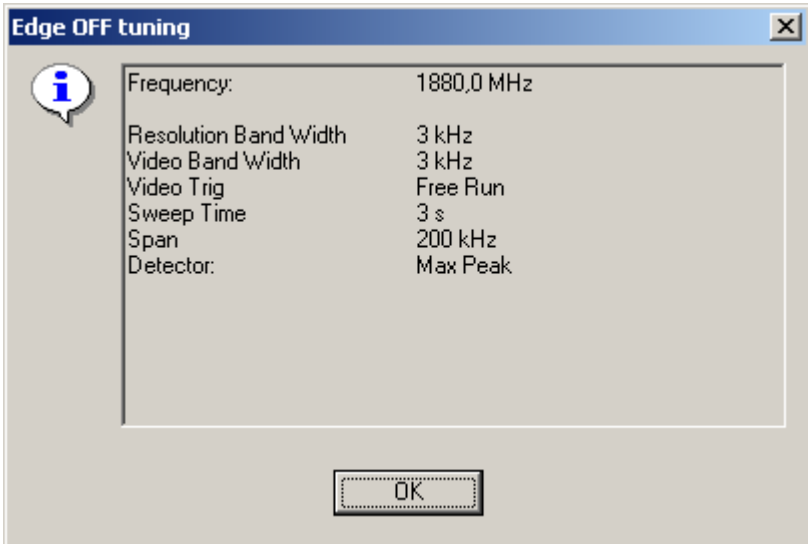
28.To save the tuning values to phone's memory, click Save & Continue.



Tuning continues at GSM1900 band

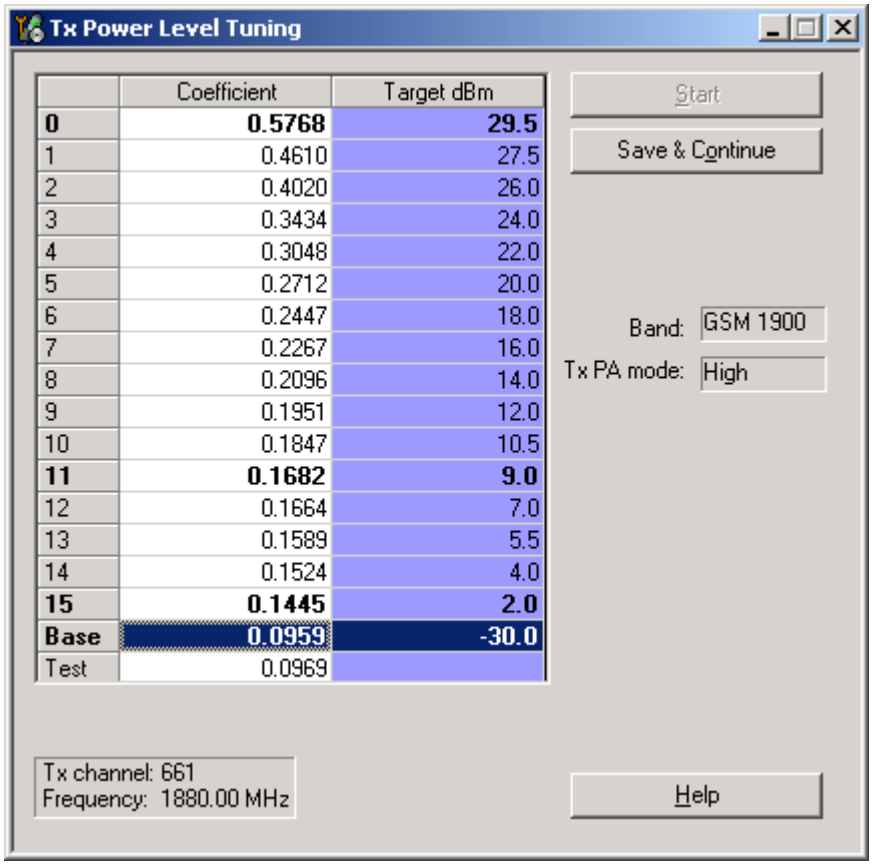
29.Set up spectrum analyzer accordingly.

Remember to take the jig and cable attenuations into account!



30.Click OK.

31.Tune Base level and power levels 15, 11 and 0 to target level.



*Note! For **RA-3** only. Use the following tuning targets:*

- power level 0 = 29,7 dBm
- power level 1 = 27,7 dBm
- power level 13 = 5,0 dBm
- power level 14 = 3,5 dBm
- power level 15 = 1,5 dBm.

Other targets are as shown in the picture above.

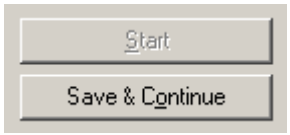
Table 12: Typical values for GSM1900

Power level	Coefficient Typical value
0	0,57
11	0,16
15	0,14
Base	0,10

Note! 'Typical values' above are shown as a guideline only. Slight variation from unit to unit is normal.

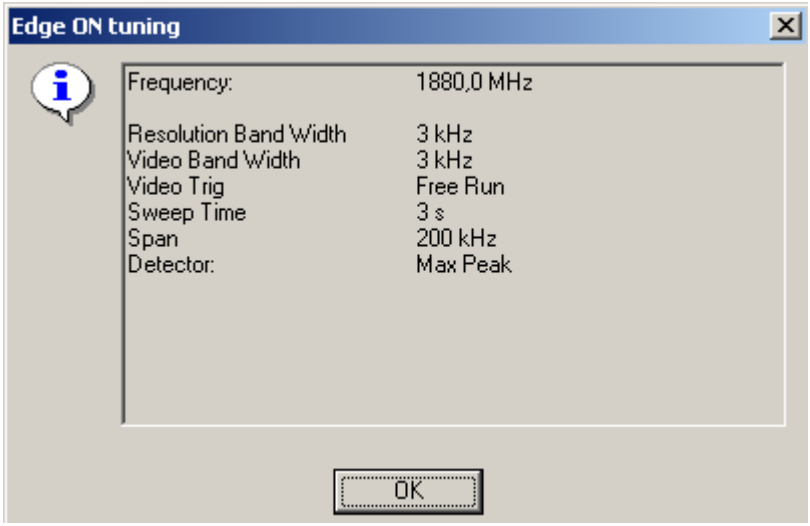
32.Click Save & Continue.

Tuning values are calculated and saved to phone's memory



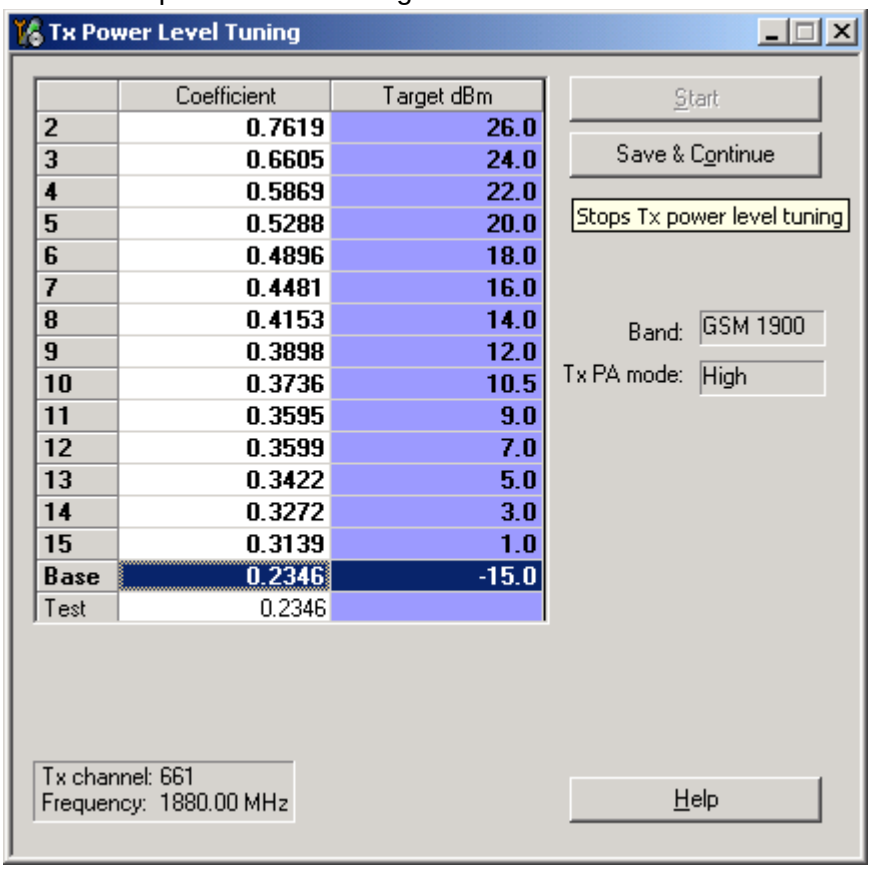
Tuning continues at EDGE1900

33.Set up spectrum analyzer accordingly.

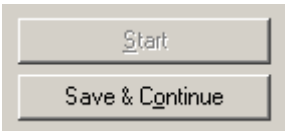


34.Click OK.

35..Tune all power levels to target level.



36.To save the tuning values to phone's memory, click Save & Continue.



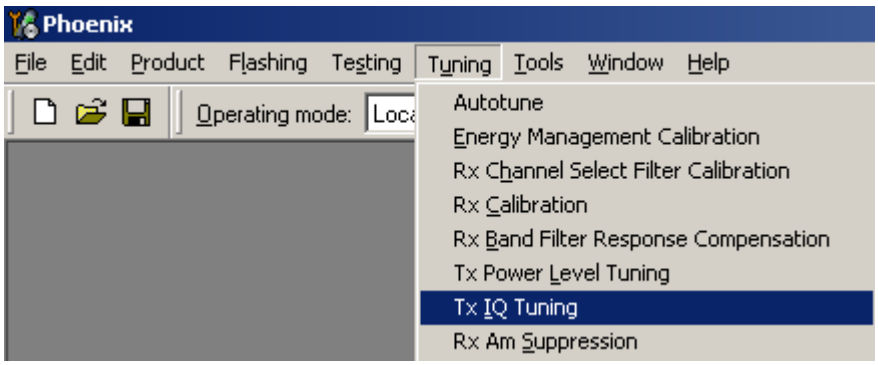
TX Power Level Tuning is now completed.

TX I/Q Tuning

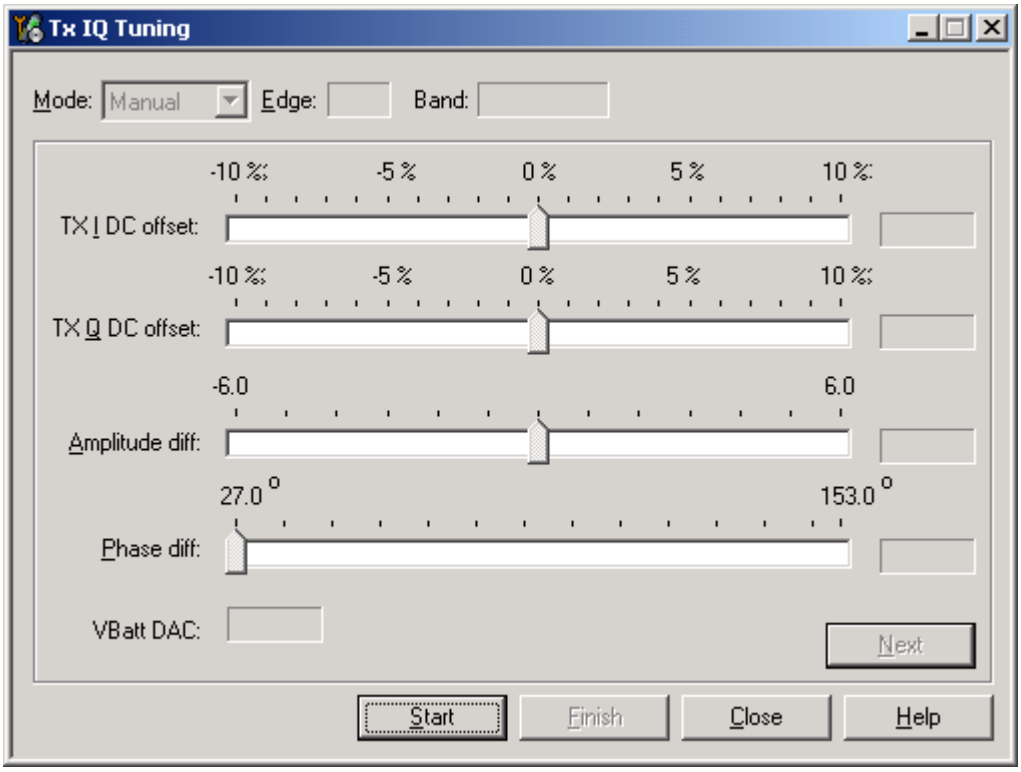
- Spectrum analyzer is needed.
- Tx IQ Tuning allows changing the Tx I DC Offset, Tx Q DC Offset, Amplitude difference and Phase difference.
- Must be done separately on all bands!

To start tuning at the GSM850 band:

1. From the Tuning menu, choose “Tx IQ Tuning”.

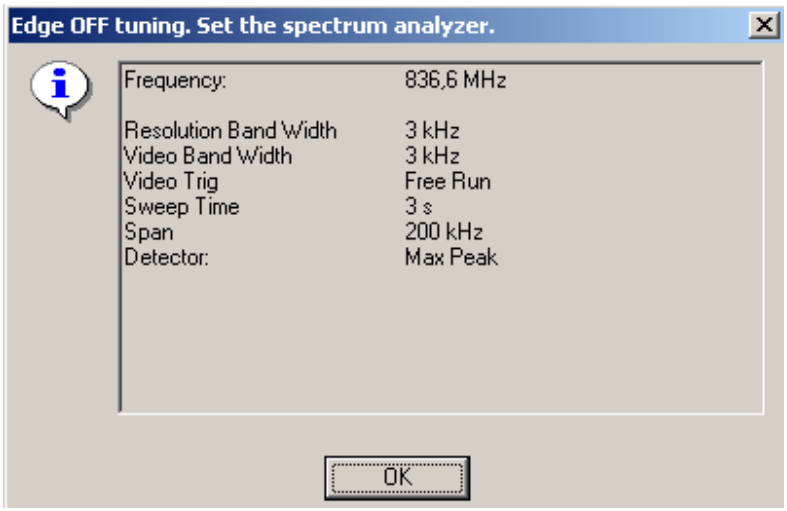


Tx IQ Tuning window appears.



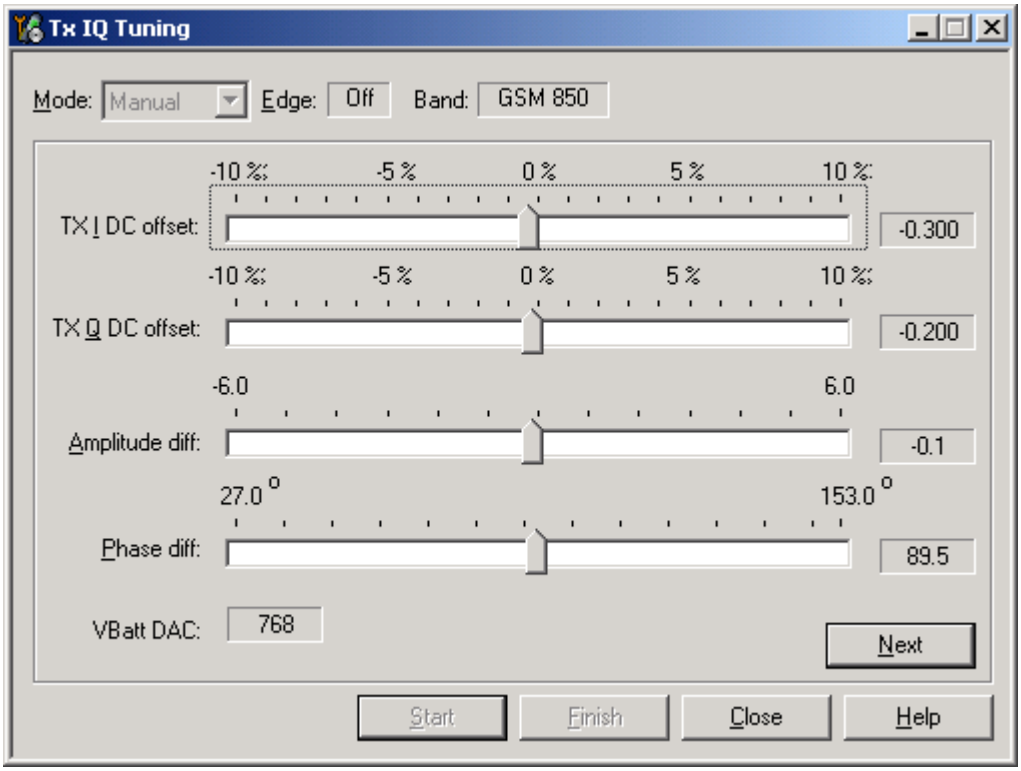
2. To begin tuning, click Start.

3. Adjust spectrum analyzer accordingly.



4. Click OK.

5. Set each of the sliders to the desired value.

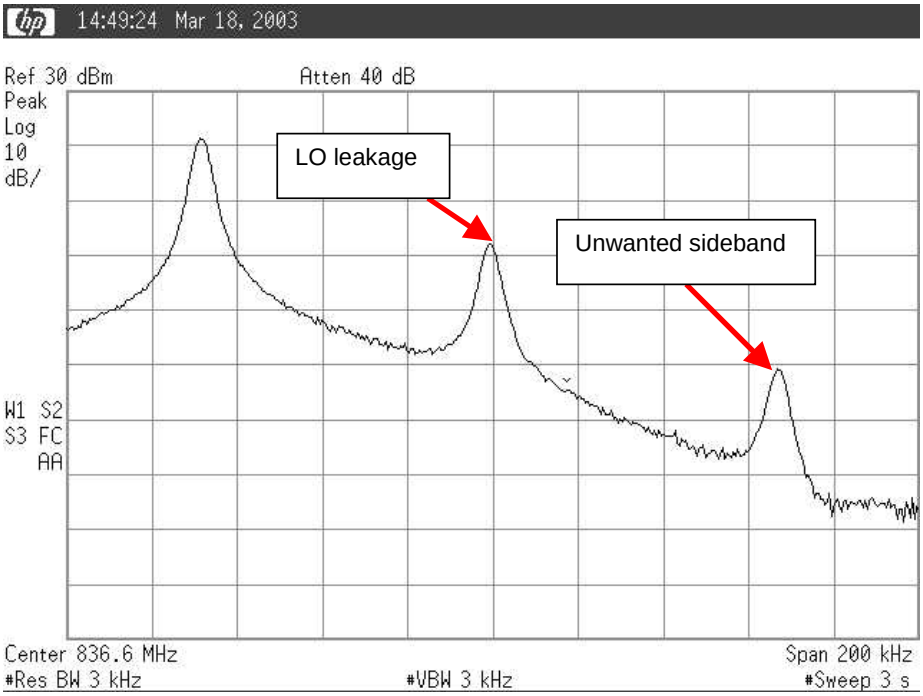


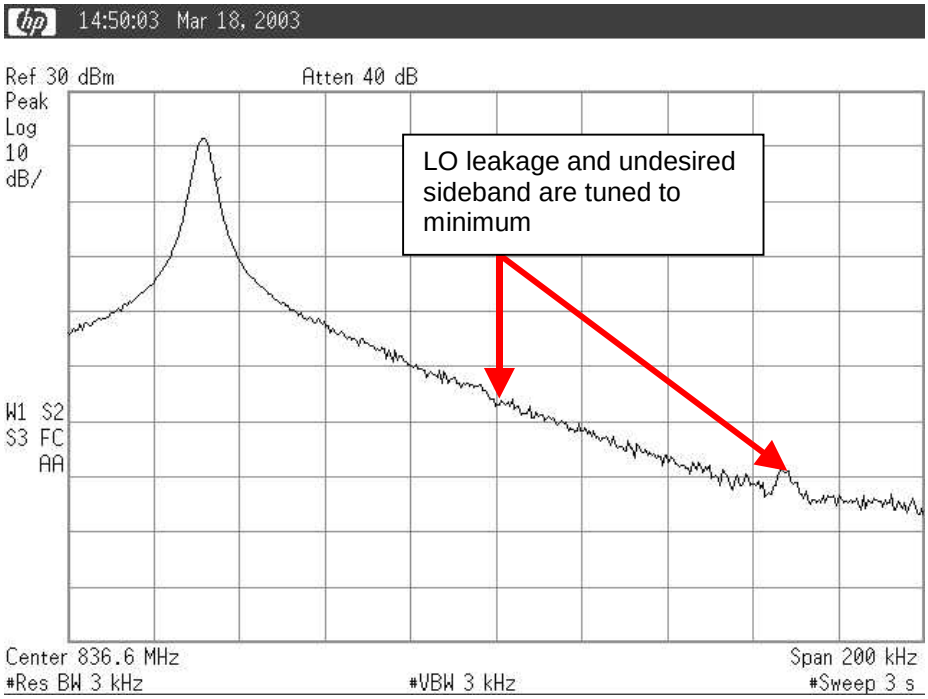
The order of tuning should be the same as the order of the sliders, that is, the Tx I DC Offset is tuned first and Phase difference is tuned last.

Use <= , =>, PgUp or PgDn keys.

6. Tune LO leakage to minimum with TXI/TXQ DC Offset control (f0 on spectrum analyzer screen).

7. To tune the undesired sideband to minimum, use Amplitude/Phase difference controls (f0 + 67.71kHz on spectrum analyzer screen).





Tuning limits are the same for all bands (GSM/EDGE850, GSM/EDGE1800 and GSM/EDGE1900):

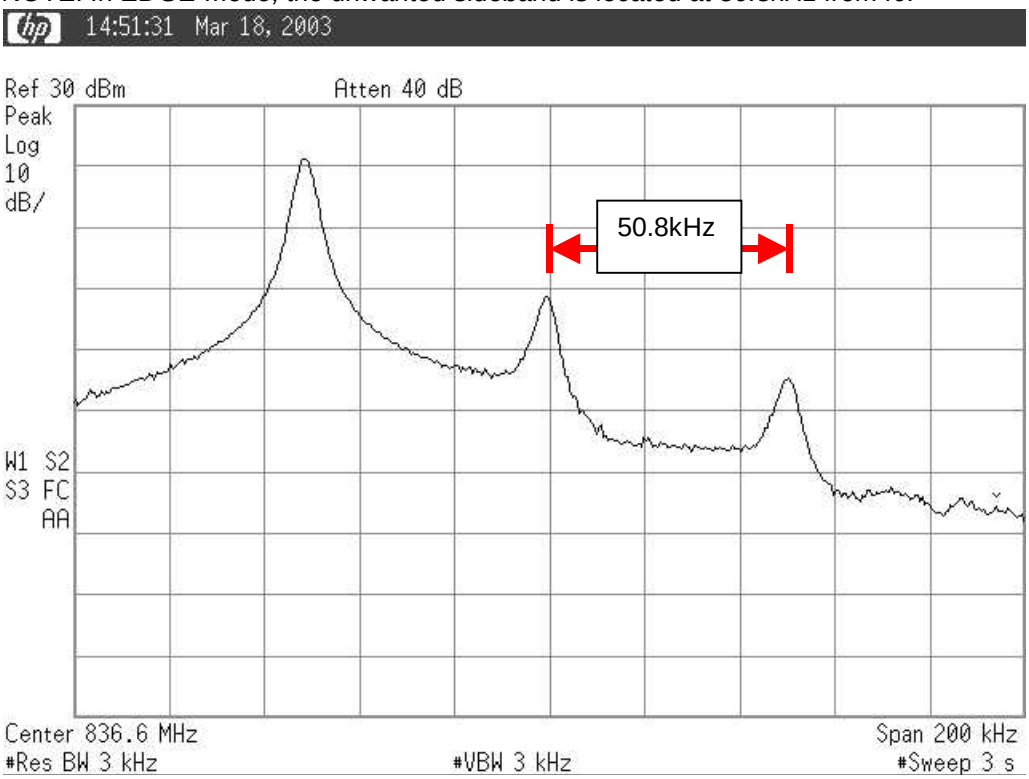
Tuning limits	Value
I DC Offset	-6…+6

Tuning limits	Value
Q DC Offset	-6…+6
Amplitude difference	-1…+1
Phase difference	- 80°…100°

8. When the IQ spectrum is balanced, click Next to continue EDGE850 Tx IQ tuning.

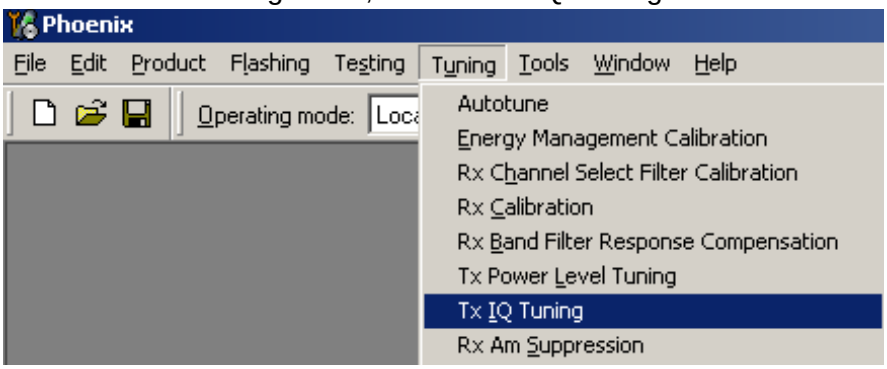
Spectrum analyzer settings are the same as for GSM850 Tx IQ tuning.

NOTE! In EDGE-mode, the unwanted sideband is located at 50.8kHz from f0.

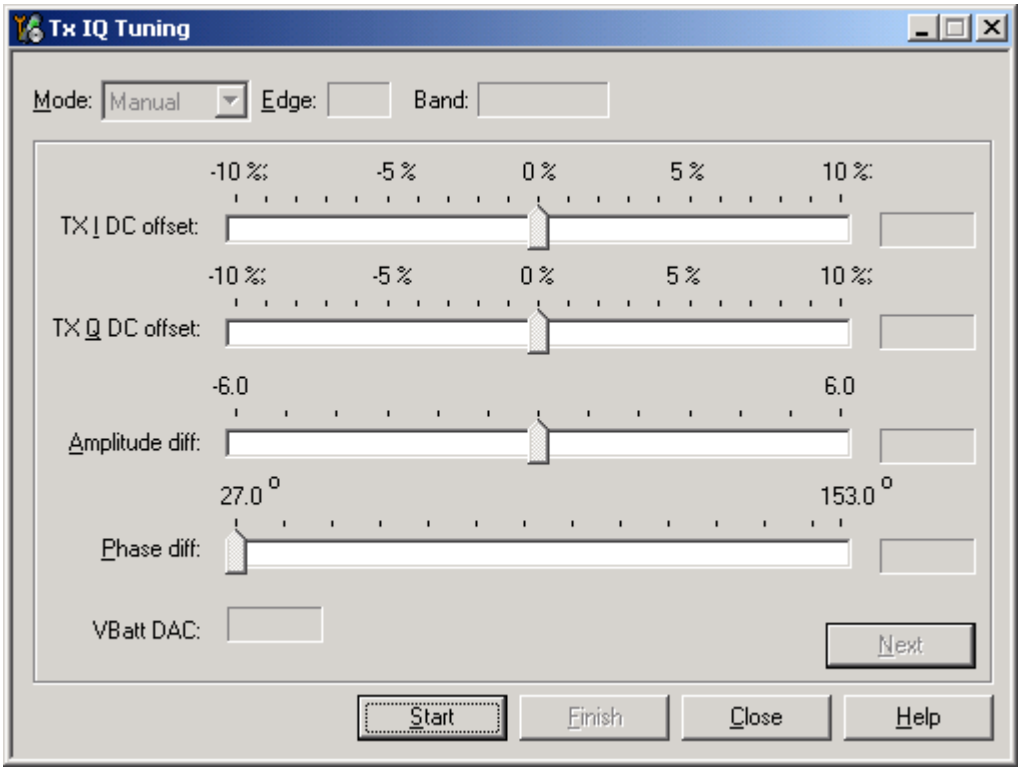


9. When the IQ spectrum is balanced, click Next to continue GSM1800 Tx IQ tuning.

10.From the Tuning menu, choose “Tx IQ Tuning”.



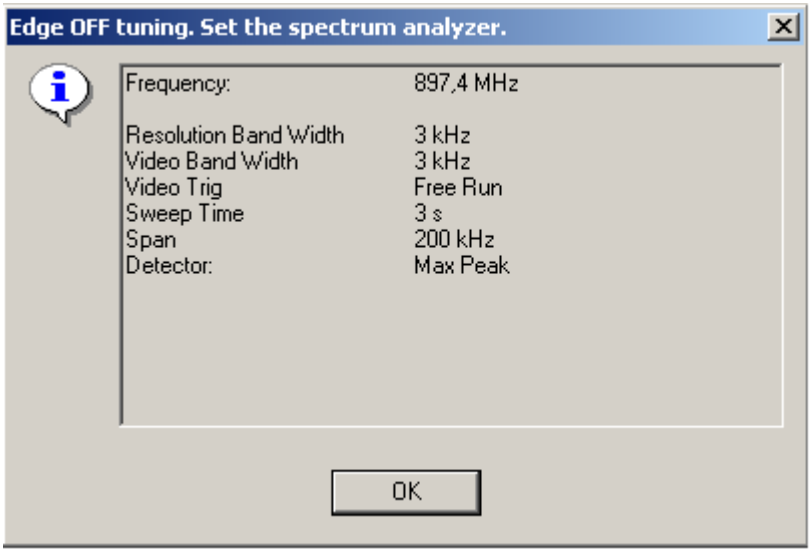
Tx IQ Tuning window appears.



11.Click Start.

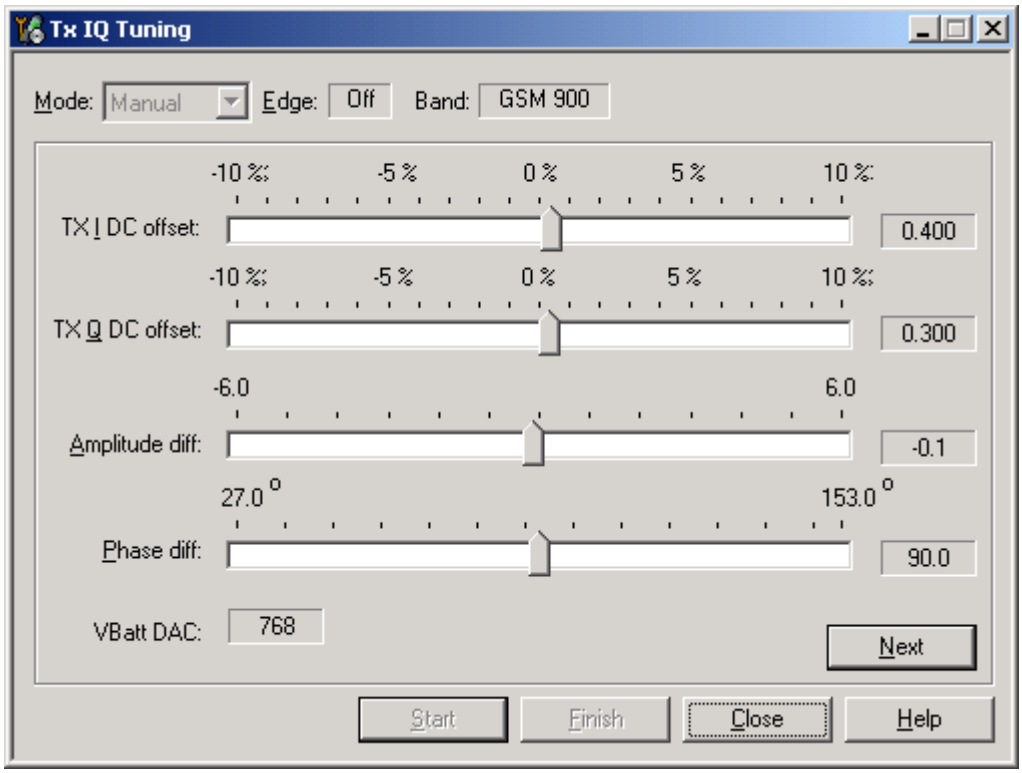
Tuning begins at the GSM900 band.

12.Adjust spectrum analyzer accordingly.



13.Click OK.

14.Set each of the sliders to the desired value.

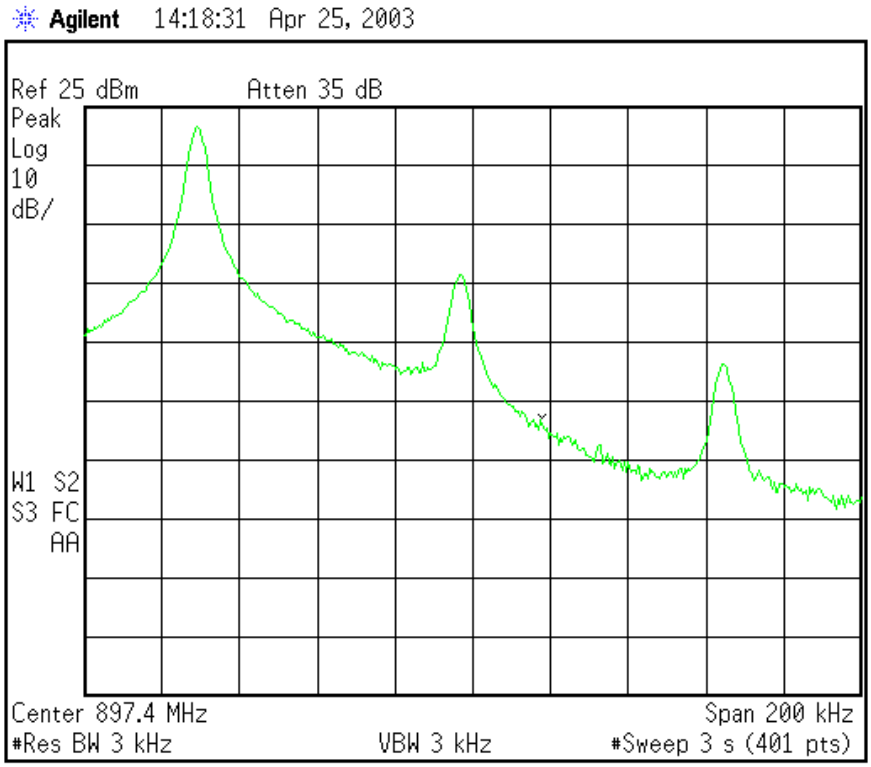


The order of tuning should be the same as the order of the sliders, that is, the Tx I DC Offset is tuned first and Phase difference is tuned last.

Use <= , =>, PgUp or PgDn keys.

15.Tune LO leakage to minimum with TXI/TXQ DC Offset control (f0 on spectrum analyzer screen).

16.To tune the undesired sideband to minimum, use Amplitude/Phase difference controls (f0 + 67.71kHz on spectrum analyzer screen).



Tuning limits are the same for all bands (GSM/EDGE900, GSM/EDGE1800 and GSM/EDGE1900):

Tuning limits	Value
I DC Offset	-6…+6
Q DC Offset	-6…+6
Amplitude difference	-1…+1
Phase difference	- 80°…100°

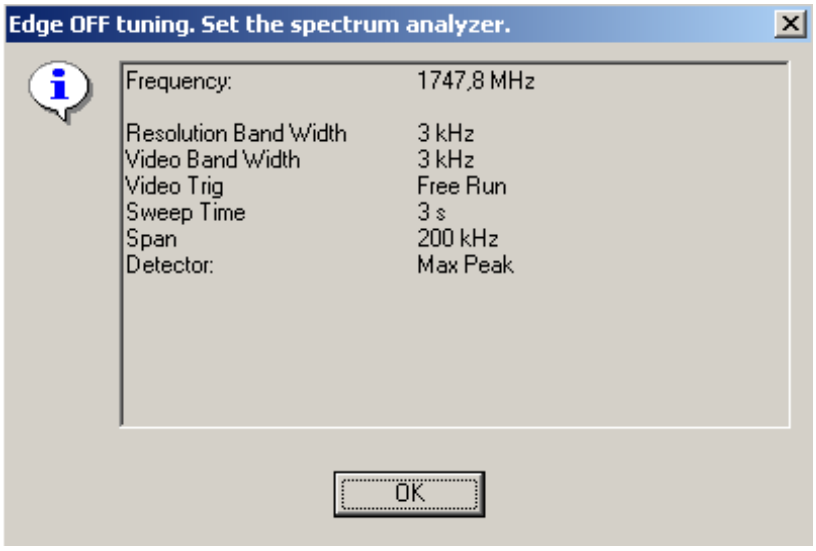
17.When the IQ spectrum is balanced, click Next to continue EDGE900 Tx IQ tuning.

Spectrum analyzer settings are the same as for GSM900 IQ tuning.
NOTE! In EDGE-mode, the undesired sideband is located at 50.8kHz from f0.

18.When the IQ spectrum is balanced, click Next to continue GSM1800 Tx IQ tuning.

Continue tuning at GSM/EDGE1800 band

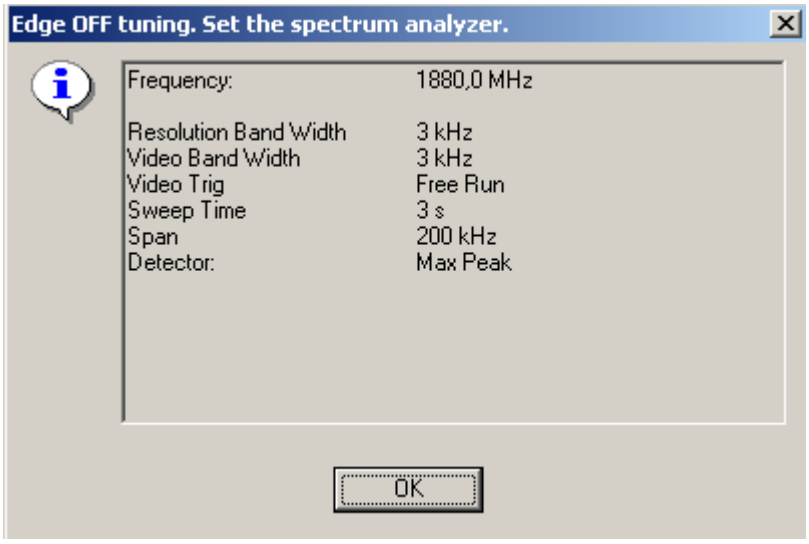
19.Adjust spectrum analyzer accordingly.



Both GSM and EDGE 1800 use the same settings.

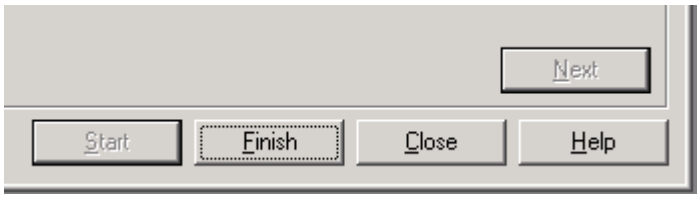
Continue tuning at GSM/EDGE1900 band

20.Adjust spectrum analyzer accordingly.



Both GSM and EDGE 1900 use the same settings.

21.When GSM and EDGE 1900 are tuned, click Finish and then close the window.



Service Tool Concept for Baseband Tuning Operations

EM calibrations should be carried out in the JBV-1 docking station equipped with the DA-14 docking station adapter.

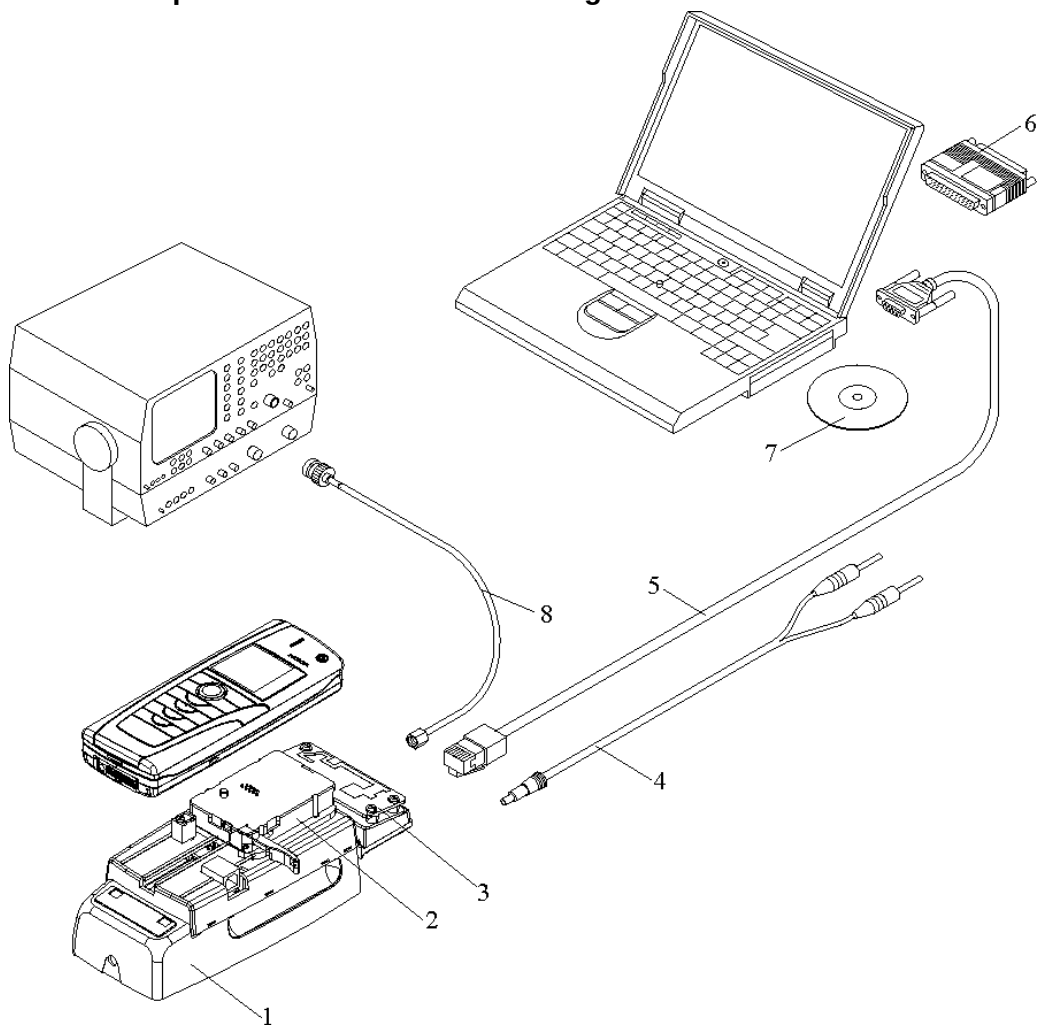
Note: RF tunings must be carried out in the MJ-19 module jig.

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

JBV-1 input voltages:

- Maximum +16 VDC
- Nominal input for RF tunings is +12 V DC

Service concept for RA-2/3* baseband tunings



Item	Accessory type	Service Accessory	Product code
1	JBV-1	Docking station	0770298
2	DA-14	Docking station adapter (Americas)	0780366
3	SA-28	RF coupler	0770676
4	PCS-1	DC power cable	0730012
5	DAU-9S	Service FBUS cable	0730108
6	PKD-1	Software protection key	0750018
7	Service SW	CD-ROM	
8	XRF-1	RF cable	0730085

Baseband Tuning Operations

Energy Management Calibration

External power supply is needed.

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

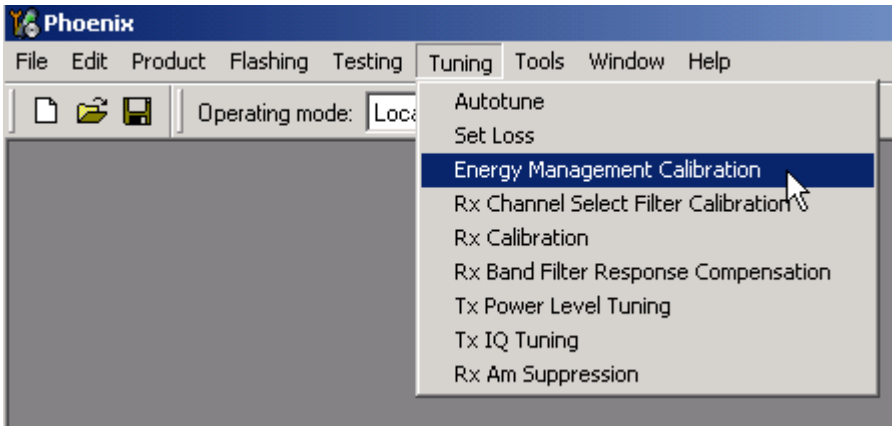
Preparation for EM Calibration:

- Connect the DC Cable CA-5S 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 FBUS (does not work with MBUS).

To start tuning:

1. From the Tuning menu, choose “Energy Management Calibration”.



Energy management values to be calibrated are checked.

2. To show the current values in the phone memory and to check that the communication with the phone works, click Read From Phone.

3. To run the selected calibrations, click Calibrate.

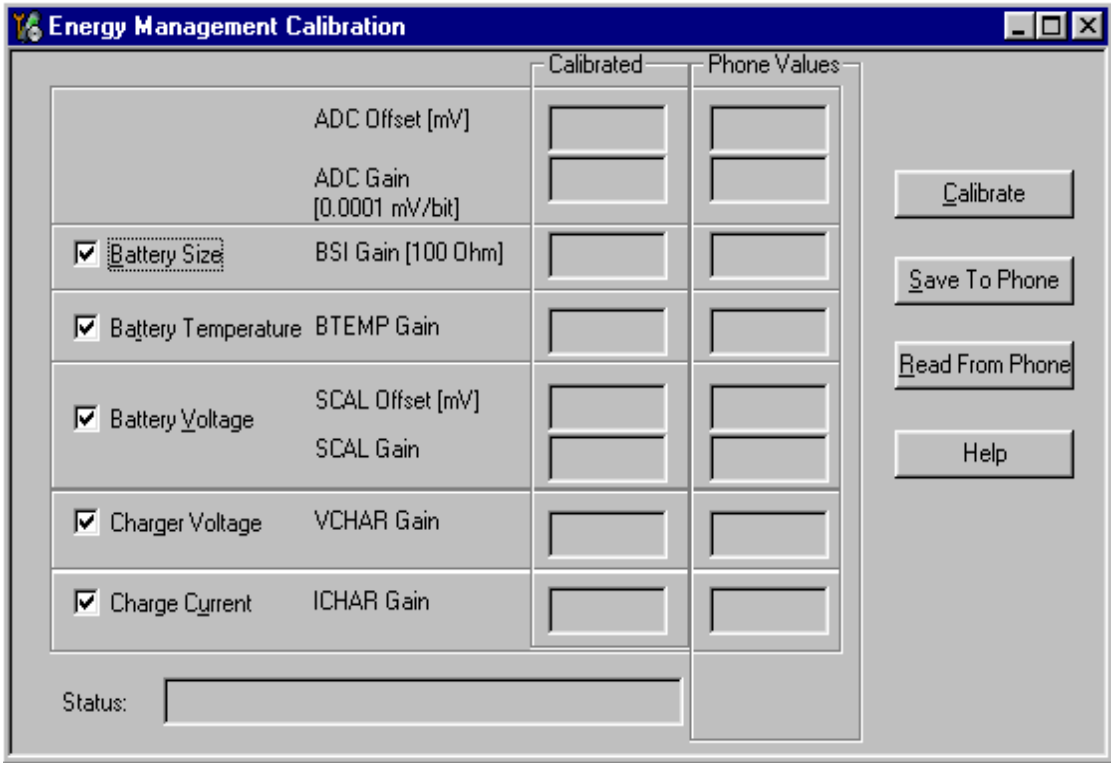


Table 13: Limits for Energy Management Calibration

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

4. If values shown are within limits, click Save To Phone to save the values to the phone.

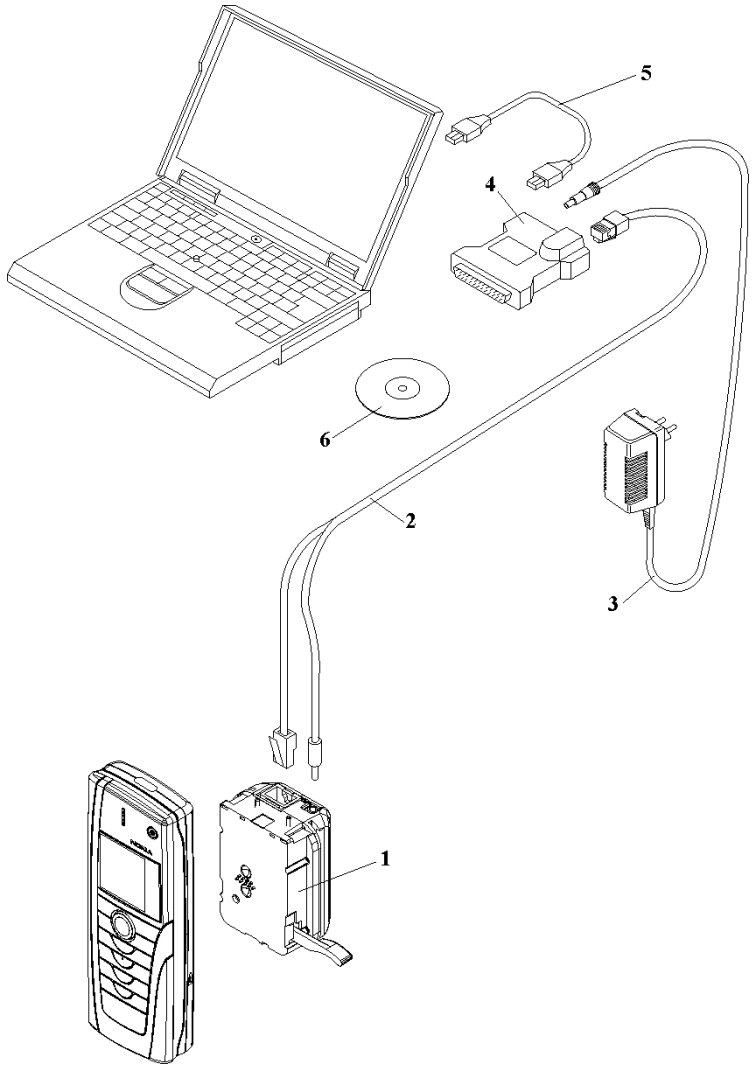
NOTE! Only the values of the checked tunings (Battery size, Battery Temperature etc…) are saved.

5. To end tuning, close the “Energy Management Calibration” window.

6. After exiting the dialog, switch the phone on.

Flashing Setup Instructions

POS (Point of Sale) flash concept

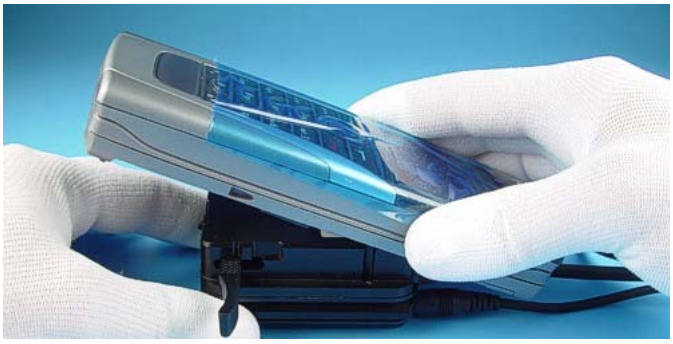


Item	Type	Description	Code
1	SF-14	Point of sales flash adapter	0780368
2	CA-28DS	Service data cable	0730319
3	ACF-8	Universal power supply	0680032
4	FLS-4S	FLS-4S sales package E&A	0080541
	FLS-4S,	FLS-4S sales package APAC	0080542
	FLS-4S,	FLS-4S sales package US	0080543
5		Standard USB cable	
6		Service SW CD-ROM	

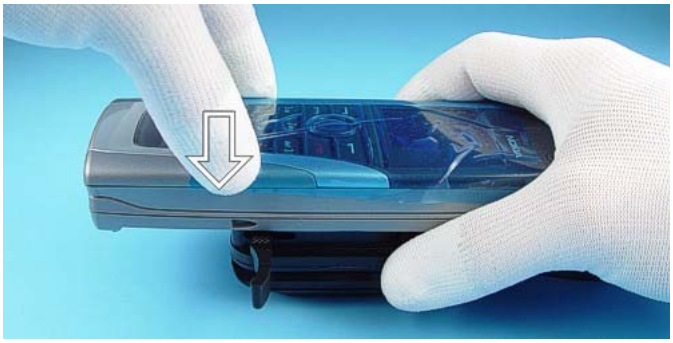
Software update with FLS-4S

It is very important to follow this insertion and removal procedure, otherwise the contact pins of the flash adapter can be damaged.

1. Insert the Flash Adapter SF-14 like a battery, start at the Battery Connector side.



2. Carefully push down the phone.



3. First unlock the FLASH ADAPTER and then lift the bottom side of the device.

4. Remove the unit from the flash adapter.

Flash concepts with flashing adapter

Figure 9: Flash concept with FPS-8

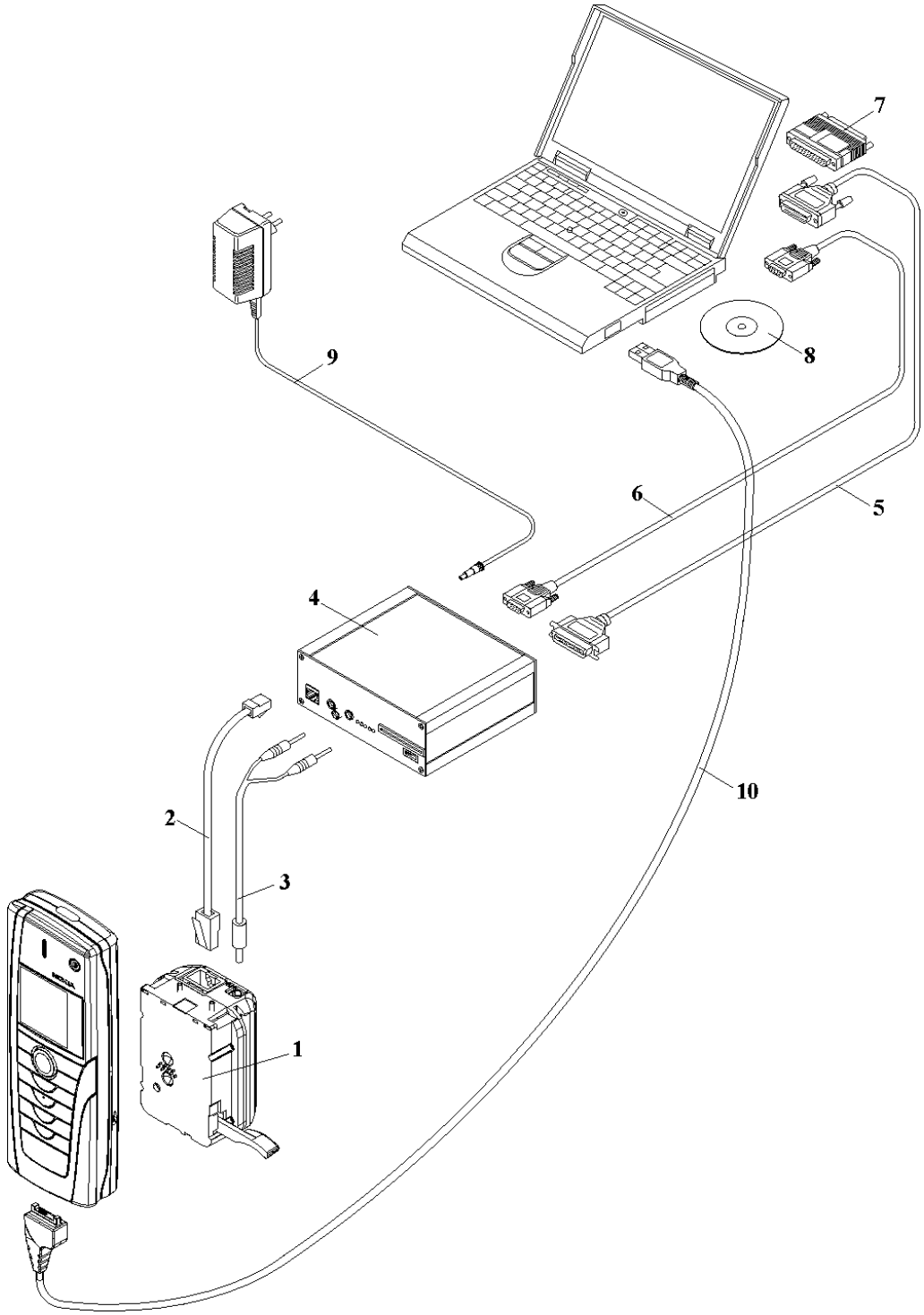
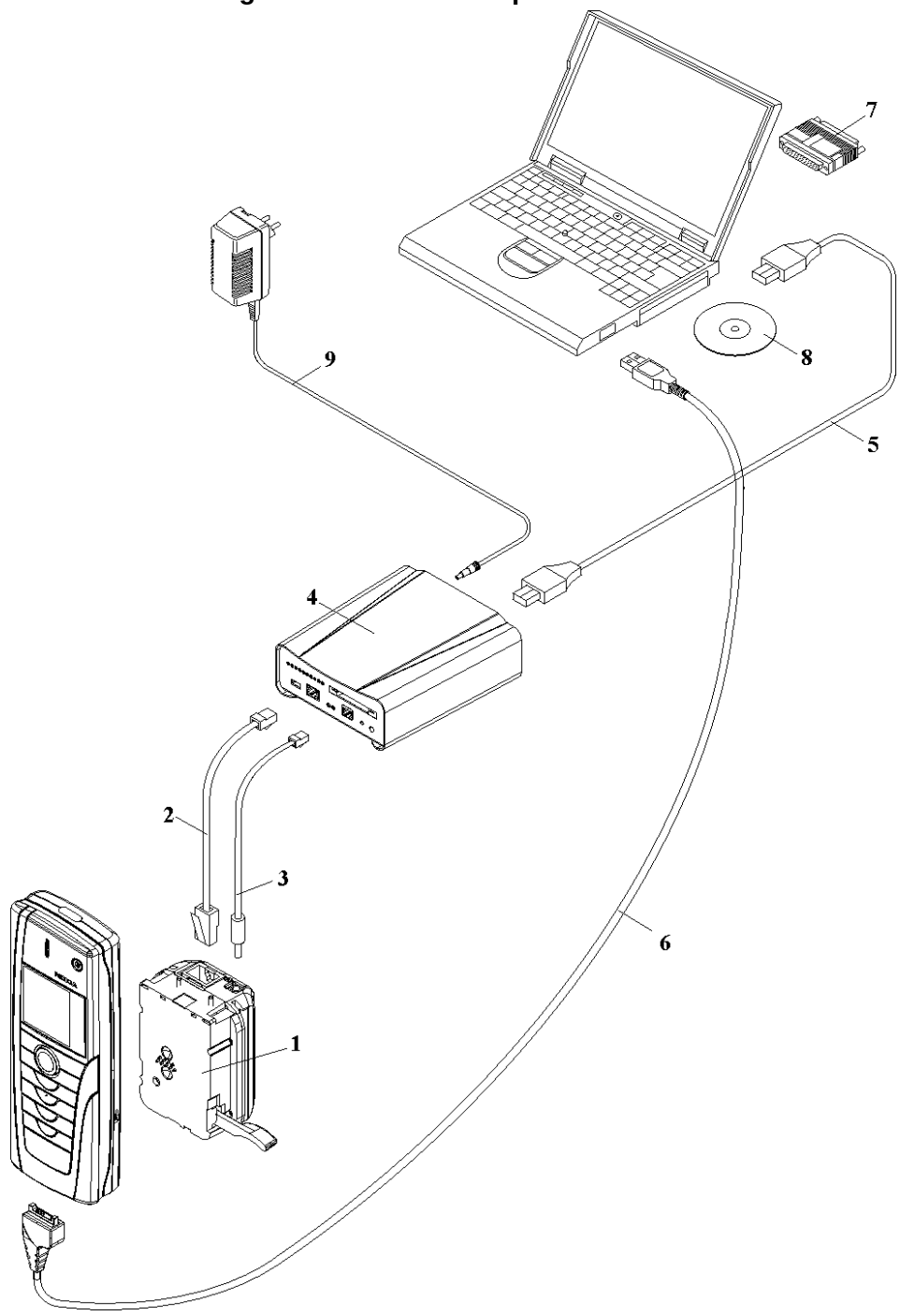


Figure 10: Flash concept with FPS-10

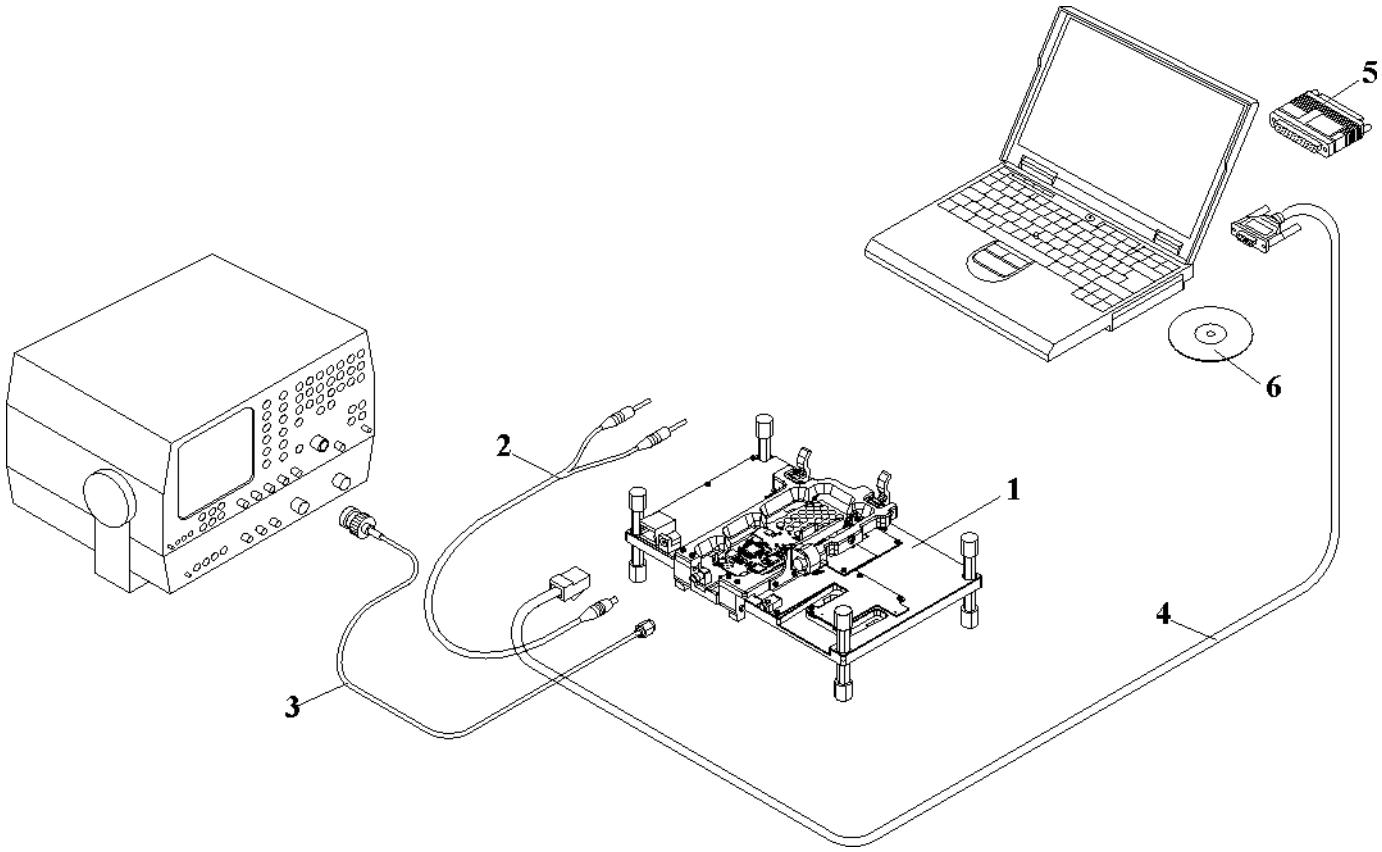


Item	Type	Description	Code
1	SF-14	Point of sales flash adapter	0780368
2	XCS-4	Modular cable	0730178
3	FLC-2	Power cable	0730185
4	FPS-8	Flash prommer box	0080321

Item	Type	Description	Code
4	FPS-10	Flash prommer box	
5		Centronics (printer) cable, incl in FPS-8 sales package	0730029
6	AXS-4	RS-232 (D9-D9) cable, incl in FPS-8 sales package	0730090
7	PKD-1	Software protection key	0750018
8		Service SW CD-ROM	
9	ACF-8	AC charger, incl in FPS-8 sales package	0680032
10	DKU-2	Connectivity cable	0730238

MJ-19 module jig concepts

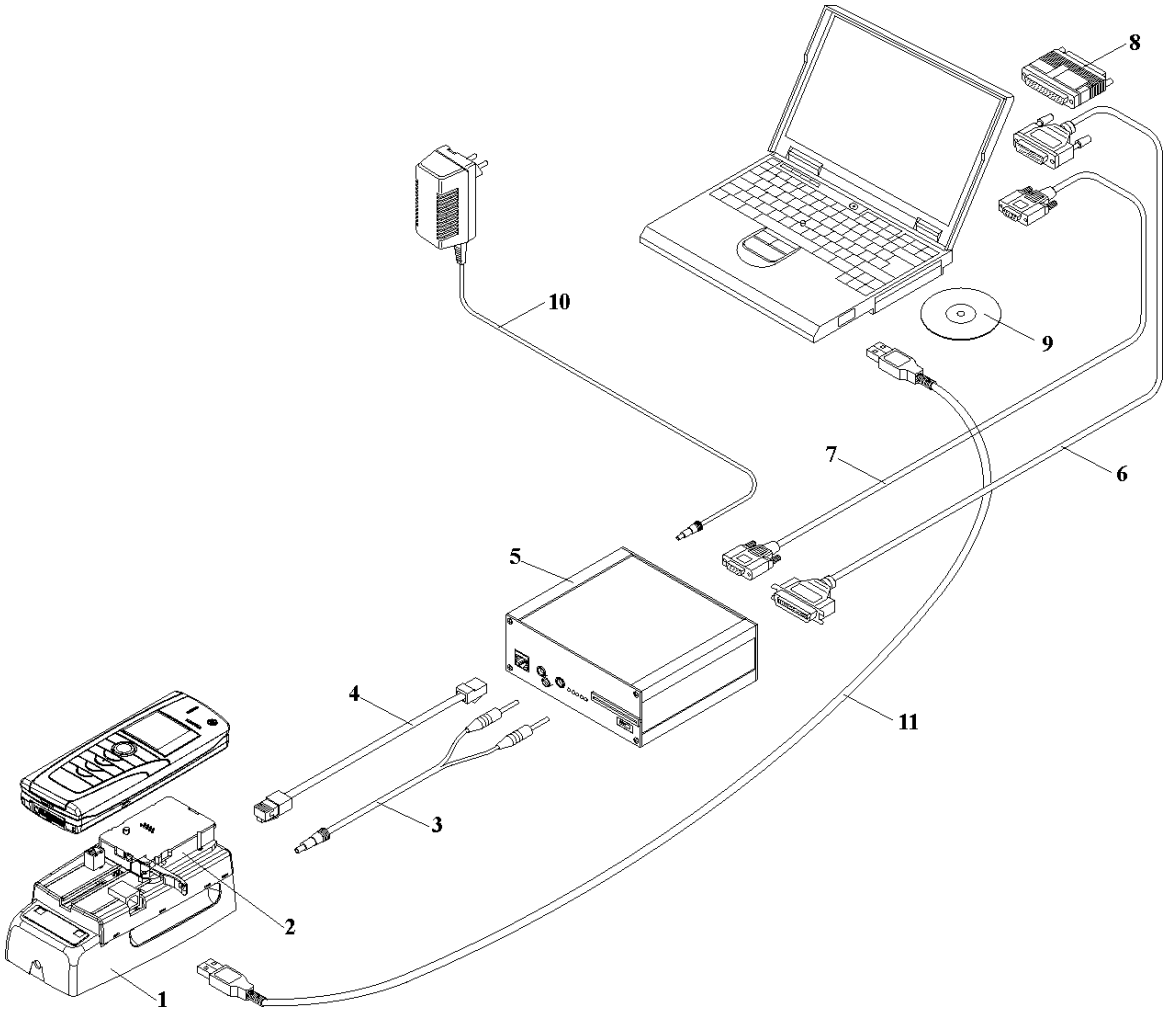
Figure 11: MJ-19 module jig concept



Item	Type	Description	Code
1	MJ-19	Module jig	0780372
2	PCS-1	DC power cable	0730012
3	XRF-1	RF antenna cable	0730085
4	DAU-9S	Service FBUS cable	0730108
5	PKD-1	Software protection key	0750018
6		Service SW CD-ROM	

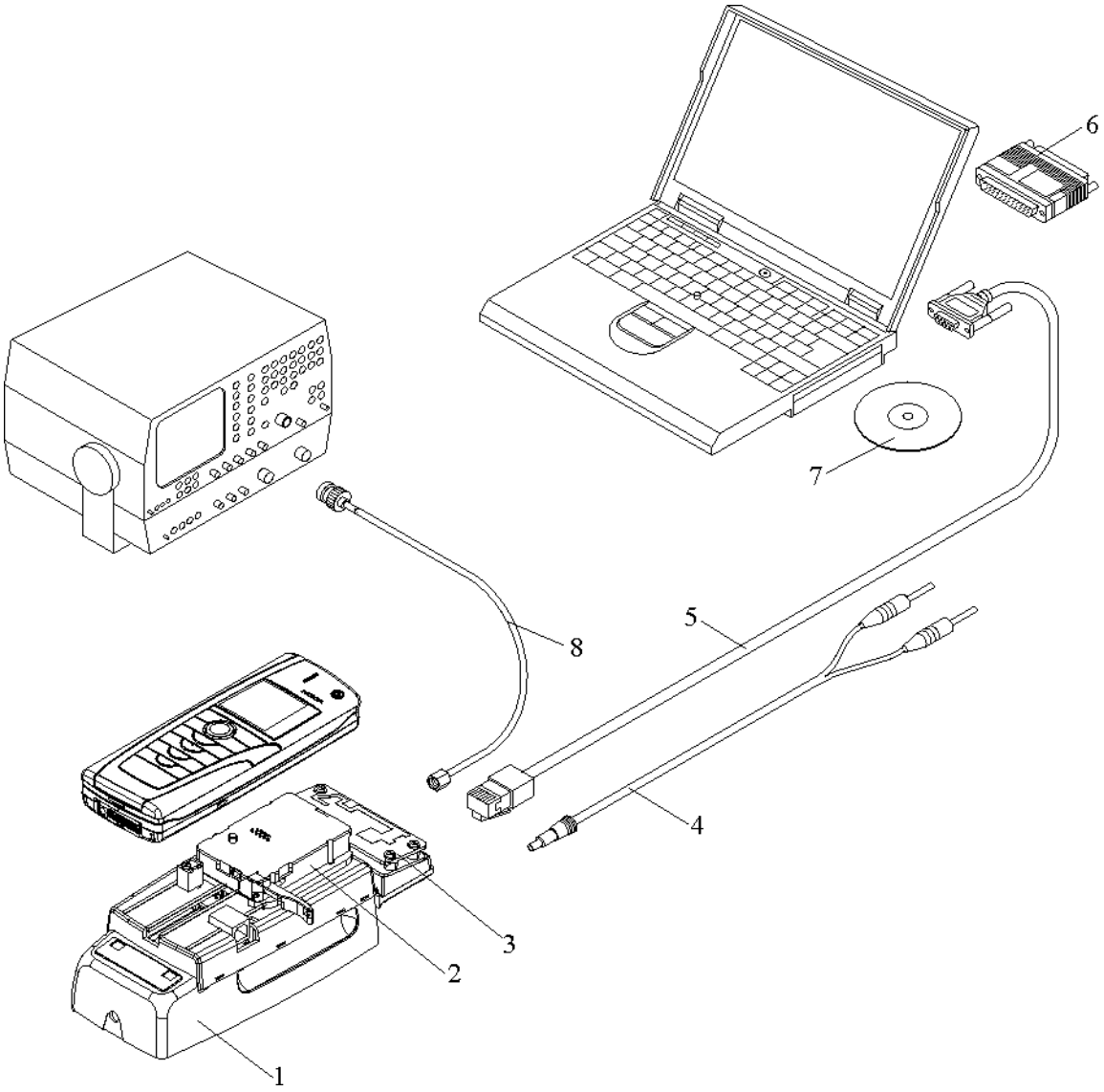
JBV-1 flash concept with FPS-8

Figure 12: JBV-1 flash concept with FPS-10



Item	Type	Description	Code
1	JBV-1	Docking station	0770298
2	DA-14	Docking station adapter	0780366
3	PCS-1	DC power cable	0730012
4	XCS-4	Modular cable	0730178
5	FPS-8	Flash prommer box	0080321
6	DKU-2	Connectivity cable	0730238
7	AXS-4	D9 – D9 cable, incl. in FPS-8 sales pack	0730090
8	PKD-1	Software protection key	0750018
9		Service SW CD-ROM	
10	ACF-8	AC charger, incl. in FPS-8 sales pack	0680032

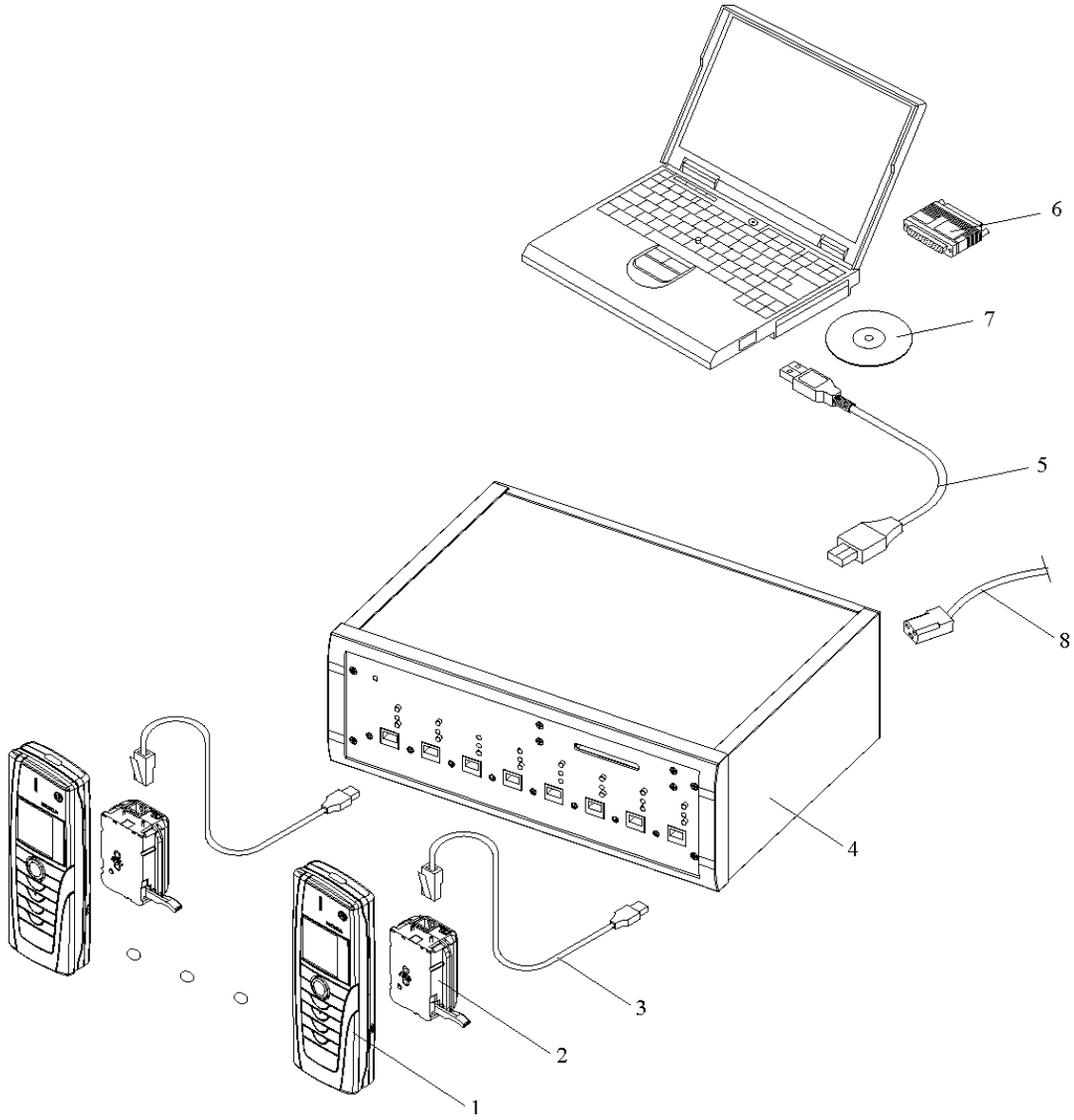
Service concept for RF testing and BB tuning



Note! RF tuning not allowed with RF coupler SA-49!

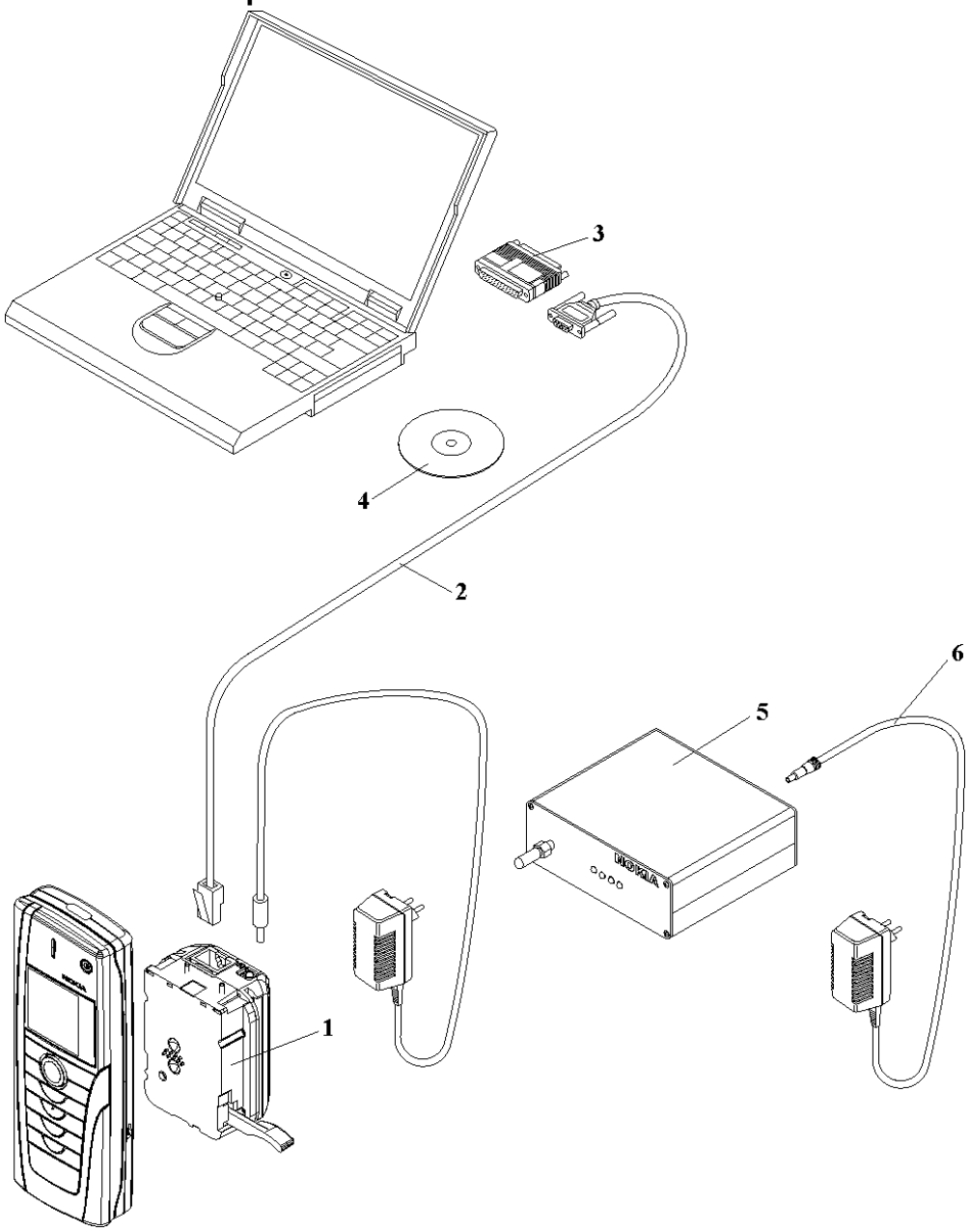
Item	Type	Description	Code
1	JBV-1	Docking station	0770298
2	DA-14	Docking station adapter	0780366
3	SA-49	RF-coupler	0770866
4	PCS-1	DC power cable	0730012
5	DAU-9S	Service FBUS cable	0730108
6	PKD-1	Software protection key	0750018
7		Service SW CD-ROM	
8	XRF-1	RF cable	0730085

Parallel flash concept



Item	Type	Description	Code
1	RA-2/3	Transceiver unit	
2	DA-14	Docking station adapter	0780366
3	XCS-4	Modular cable	0730178
4	FPS-11	Multiprommer	0770758
5		Standard USB cable	
6	PKD-1	Software protection key	0750018
7		Service SW CD-ROM	
8		FPS-11 power cable	

Bluetooth test concept



Item	Type	Description	Code
1	SF-14	Point of sales flash adapter	0780368
2	DAU-9S	Service FBUS cable	0730108
3	PKD-1	Software protection key	0750018
4		Service SW CD-ROM	
5	JBT-9	Bluetooth test box	0081490
6	ACP-8E (for Europe) ACP-8U (for U.S.)	Charger for JBT-9	0675195 0675196