vna/J 2.7.5
Users guide

Dietmar Krause

DL2SBA

Hindenburgstraße 29

D-70794 Filderstadt

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Table of contents

Changes

Version	Date	Who	Changes
2.0.2	14.02.2010	DL2SBA	Updated for new GUI and functions
2.1.0	15.02.2010	DL2SBA	Update new logic for calibration. Extended overview
2.1.3	17.02.2010	DL2SBA	Added first version of sample section Added hints and tips section. Statusbar updated.
2.2.0	18.02.2010	DL2SBA	Generator support explained. Driver info dialog added. DDS calibration explained.
2.2.1	19.02.2010	DL2SBA	Minor corrections
	20.02.2010	DL2SBA	Extensions
2.3.2	23.02.2010	DL2SBA	Extended description
2.4.0	26.02.2010	DL2SBA	Shortcut for calibration loading New marker panel Automatic scaling on scales Cable measurement extended
2.4.1	28.02.2010	DL2SBA	Added description for scheduler
2.4.3	05.03.2010	DL2SBA	GUI further described. Custom scaling added. Automatic reloading of calibration data added.
2.4.4	12.03.2010	DL2SBA	Fixed scheduler problem with multiple executed tasks. Added search functions to SWR, loss and phase marker. Added colour setup dialog for diagram area. Added export into S-parameter file.
2.4.10	09.04.2010	DL2SBA	Added descriptions for Data-analysis- and Smith-chart-dialogs. Added JAVA section for Mac OS
2.4.11	10.04.2010	DL2SBA	Corrected bug in "how to launch in a different language" chapter. Changed chapter "enable logging". Updated chapter "Application start Windows"
2.5.0	30.04.2010	DL2SBA	Support for miniVNApro enabled
2.5.1	03.05.2010	DL2SBA	Detailed frequency calibration for miniVNA PRO. Generator dialog for miniVNA PRO added
2.5.4	08.05.2010	DL2SBA	Updated section " Frequency calibration ". Updates section " How to launch in a different language"

Version	Date	Who	Changes
2.6.0	06.06.2010	DL2SBA	Added - Marker math - Simple-tune dialog - Multi-tune dialog - Network support Updated - Sample calibration sets for miniVNA and miniVNAPRO - Error reporting details - S-Parameter export - Z-Plots export
	11.07.2010	DL2SBA	Added - Generator output waveforms - Load raw in main diagram
	05.09.2010	DL2SBA	Updated - Installation on 64bit Mac OS X machines
2.6.9	02.11.2010	DL2SBA	Updated installation sections for - MS Windows machines - Mac OS X machines
2.6.11	14.11.2010	DL2SBA	Moved installation and application-start sections to new installation document. Moved technical details for drivers and network support to new driver development document.
2.6.12	03.01.2011	DL2SBA	Corrected links for new website
2.6.14	21.01.2011	DL2SBA	Added - Description of over scan feature in calibration section - Special section for miniVNA pro in calibration section - Added measurement sample and simulation to samples section Updated - Description of smith chart - Updated parameter replacement in export section - Updated section describing the analyser menu.
2.7.0	01.02.2011	DL2SBA	Changes for V2.7 added
2.7.3	16.03.2011	DL2SBA	Updated smith-chart section Updated Data analysis dialog section
2.7.5	27.05.2011	DL2SBA	Quick start section updated. Section for Update function updated.

Version	Date	Who	Changes
			Language selection dialog section added. S-Parameter collector section added.

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- First of all I want to thank my wife **Monika, DL6SCF** being incredibly understanding, supportive, and most of all, patient.

- **Davide, IW3HEV** and **his team** for these fine two little blue boxes.

- **Andy, G0POY**, for his permanent quality assurance of new releases, proof-reading this document, providing an excellent installation description for SUSE LINUX and giving useful tips regarding usability etc.

- **Dan, AC6LA**, author of ZPLOTS, for his support on writing ZPlots and SnP formats correctly.

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- **Gerrit, PA3DJY** for providing the Dutch translation and the full user manual translation!

- The numerous users worldwide giving me permanent feedback.

- And last but not least my cat **Ina**, which helped me many times solving complex situations at the keyboard ;-)

Overview

The **miniVNA** and **miniVNApro** instruments by mRS *http://www.miniradiosolutions.com* are popular and very useful test instruments.

The miniVNA instrument is a small blue box with two BNC connectors and a USB connector.

The newer miniVNApro is also small blue box now with two SMA connectors and much enhanced precision.

All the control of the instrument is performed by a software application running on a PC.

Many people have contributed to the development of this software, but the focus has been mainly on the Microsoft Windows operating system. There was a Linux based application but this is no longer supported, and the advancement of the various Linux distributions has rendered it inoperable.

I've started in 2007 to develop a control application based on the Java programming language. Initial ideas were taken from the Visual-Basic-Application that was provided by mRS.

Java is a cross-platform language, which allows the identical application binary to run on any supported Java enabled Operating System.

Currently I've tested the application on Windows98, WindowsXP, Windows7-32bit, WindowsVISTA-64bit, MacOSX 32-bit versions and MacOSX 64-bit versions.

Andy has tested it successful on SUSE LINUX 11.1 and 11.2

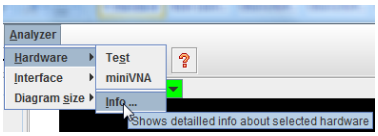
Remark:

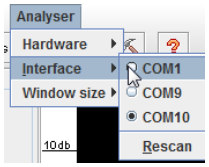
> Not all screenshots in this documentation are taken from the latest application version.
>
> Where it is necessary for understanding, the latest screenshots are used.

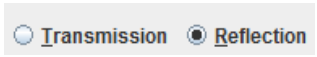
This user manual contains the following chapters:

Chapter	Main content	Read before 1st usage
Quick-start guide	Ten steps to do the first measurement	✓
GUI	A detailed description of the user interface	✓
Export	A detailed description, how to export data to images, PDF documents and other file formats.	
Tools	Describes the available tools in the application	
Measurement basic	Basic information of how to do measurements using this application	✓
Calibration	How to get good results	
Application start	How to start this application on various platforms	
Configuration	How to do internal configuration	
Installation	How to install the application on various platforms	
Samples	Shows some measurements taken with the miniVNA	
Hints & Tips	Some useful information	
Driver developer guide	Describes in detail, how to implement custom hardware drivers for this application.	
Links	Where to find more information	

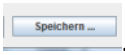
Quick-Start-Guide (32-bit Windows/OSX)

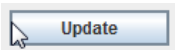
1. Plug-in the miniVNA into a free USB port on your PC.
2. Install the required FTDI serial port drivers for your PC.
3. Download the latest application version from http://vnaj.dl2sba.com
4. Start the application using the command **java -jar vnaJ_X_Y_Z.jar**
5. Select your analyser hardware via the 

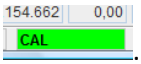
menu
6. Select the used communication port via this 

menu
7. Select the mode 

8. Open the calibration dialog via this toolbar button 

9. Follow the instructions for transmission or reflection mode calibration.
10. You can save the calibration data via this button 

.
A meaningful filename is proposed.
11. Press 

and the program is ready to work 

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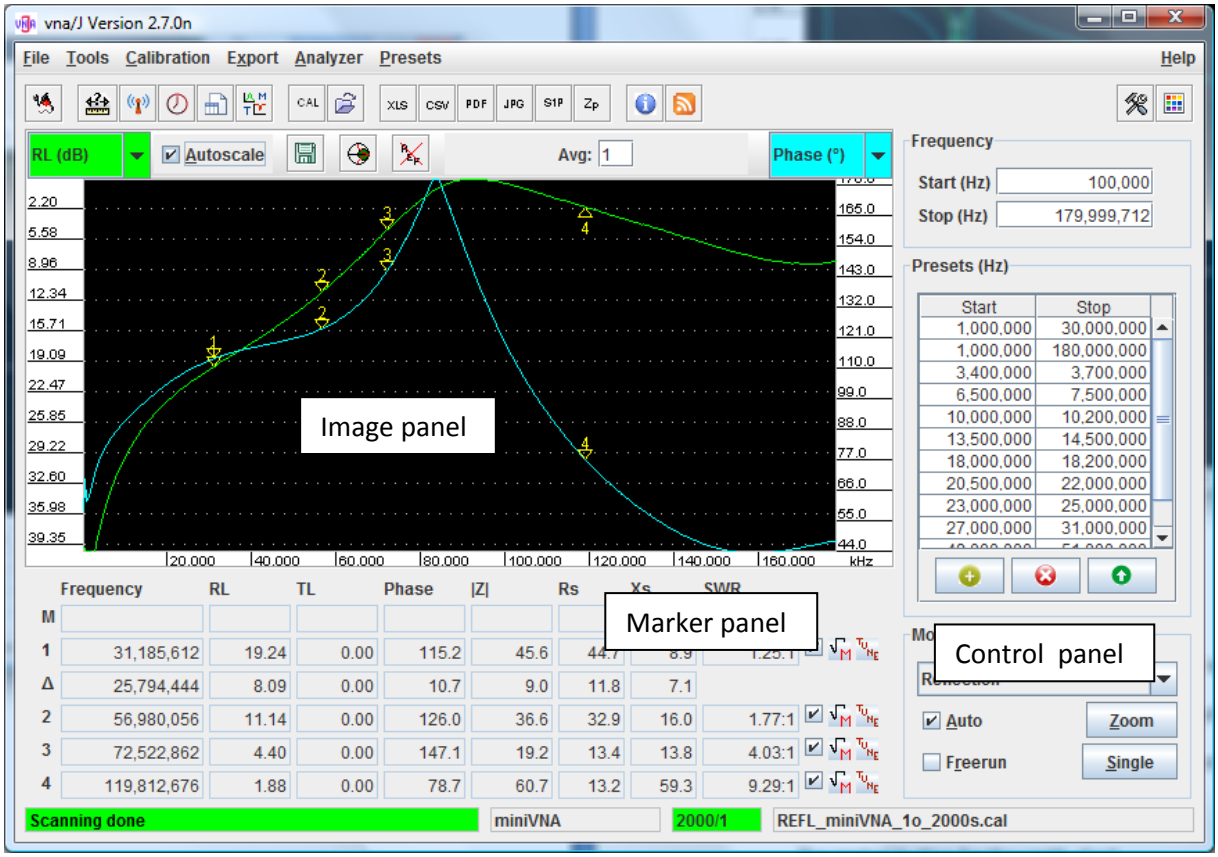
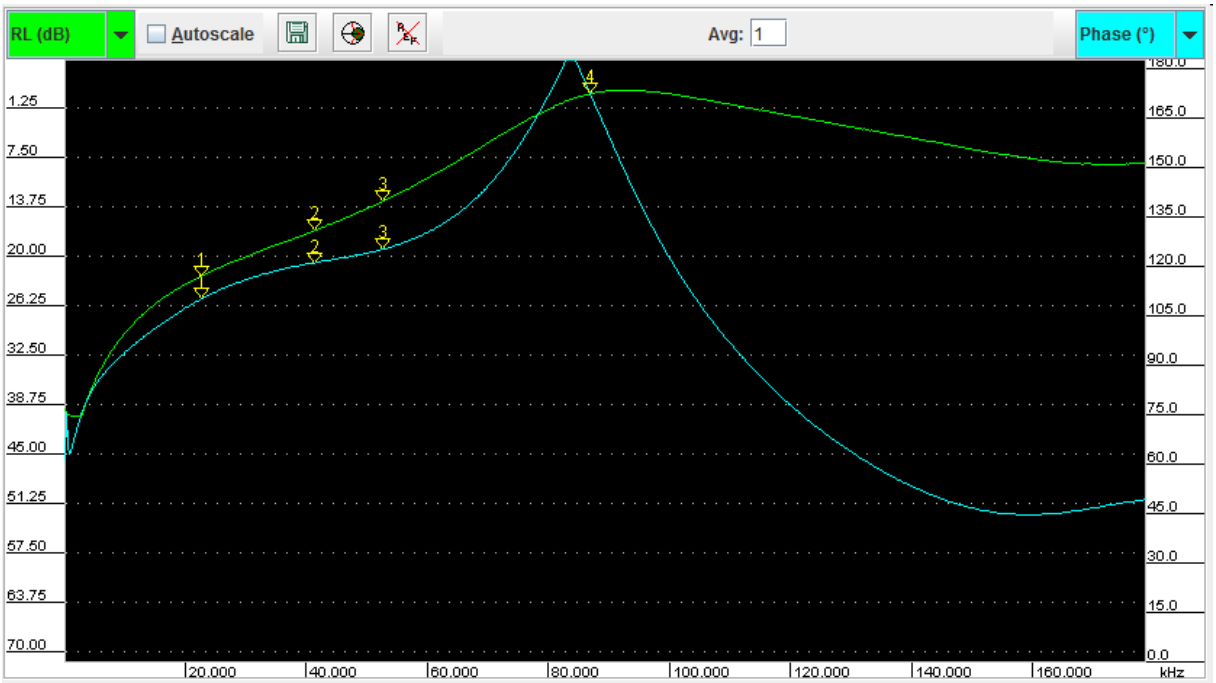
Remark: In case of problems with the above procedure, please be so kind and check the detailed installation manuals on http://vnaj.dl2sba.com prior to asking for support!

GUI

The applications main window contains the graphical representation of the scanned values in the image panel, as well as the control panel and the marker panel.



The image panel



The image panel contains the following parts:

- The scale selection drop down list boxes for the left and the right scale .
- The vertical scales matching the selected scale types in the drop down list boxes.
- The frequency scale at the bottom of the image panel.
- The control for save of measurement data
- The control button for the smith-chart
- The reference data control
- The entry field for the average function.
- The display area showing the scanned results from the analyser.

For each tick on the left scale, a dotted line is drawn in the diagram area.

Scales

Currently the following measurements are available in the scale select dropdown lists:

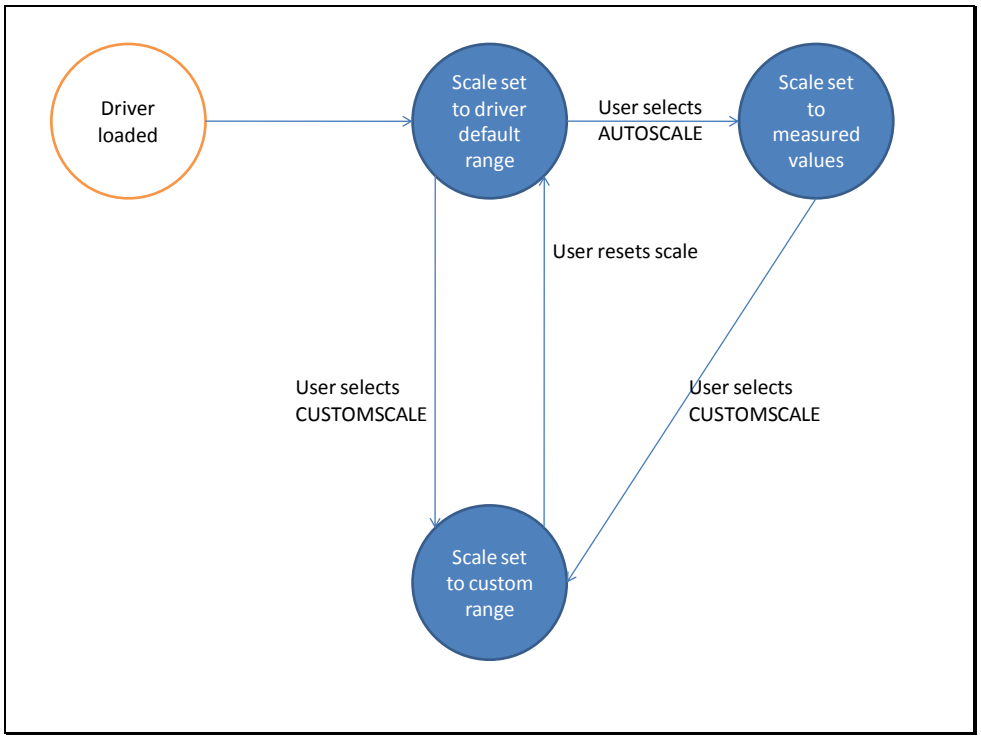
Name	Content	miniVNA minimum	miniVNA maximum	Auto scale
RL	Display return loss (only for reflection measurements)	0dB	70dB	✓
TL	Display transmission loss (only for transmission measurements)	0dB	70dB	✓
RSS	This is the absolute value of the transmission sensor. (Currently not supported on all analysers)	-80	20	✓
Phase	Display the phase value	0°	180°	✓
SWR	Displays the SWR	1:1	1:10	-
|Z|	**ZComplex** is the complex impedance of the DUT referred to 50 ohm. |Z| the magnitude of the complex impedance.	0	1000	✓
Rs	Displays the series equivalent resistance of the load also called Rs	-3000	3000	✓
Xs	Displays the series equivalent reactance of the load also called Xs	-3000	3000	✓

Basically the ranges are dependent on the select analyzer hardware.

Scale-lifecycle

Each scale has currently three states:

State	
Scale set to driver default range	The range of the scale is set to fixed range. The scales Phase and Loss are scaled based on the used driver. The other scales have a identical range independent of the loaded driver.
Scale set to measured values	The user has selected the auto-scale option. The scales range is determined by the measured data. Except the SWR scale, all scales support auto-scaling.
Scale set to custom range	The scale is set to a fixed range. The range must be entered by the user. The range may not exceed the specified ranges of the scale.



Auto-scaling

Except the SWR scale, all scales are able to scale themselves to the measured data.

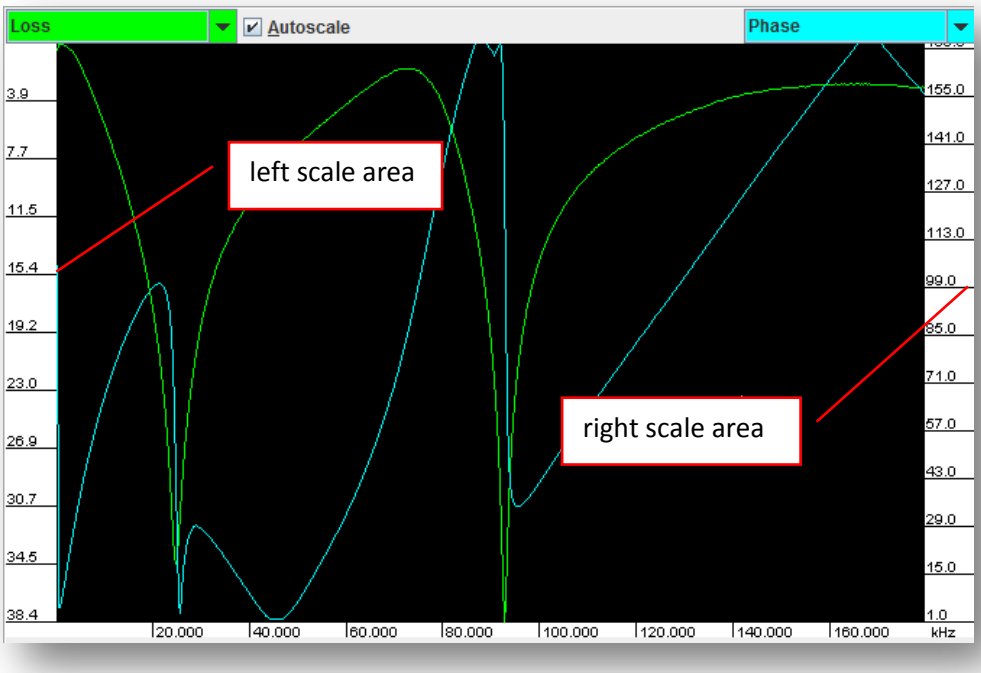
Selecting the AUTOSCALE checkbox above the diagram enables this auto scale functionality.

When deselecting the AUTOSCALE box, the scale uses the minimum and maximum values as described in the previous table.

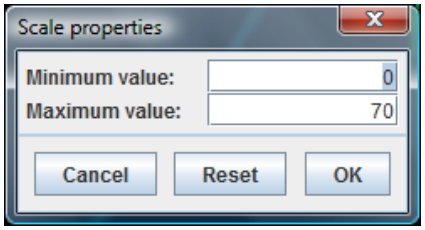
Clicking twice on the deselected AUTOSCALE box can be used to reset both scales to their default values.

Custom-scaling

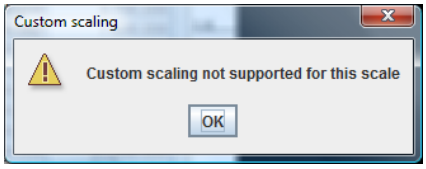
Except the SWR scale, all scales can be scaled by a user-entered range.



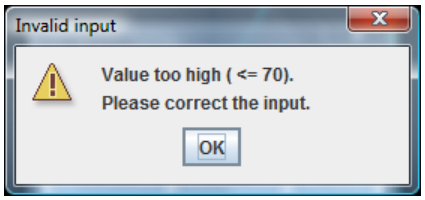
Clicking with the left mouse button on the scale area opens a small dialog, in which the user can enter the minimum (value at top of scale) and the maximum (value at bottom of scale):



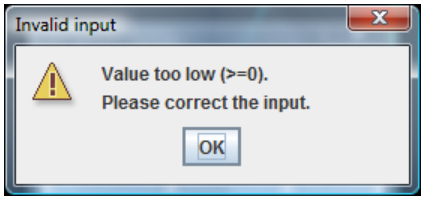
If custom scaling is not supported for this scale, a message is shown:



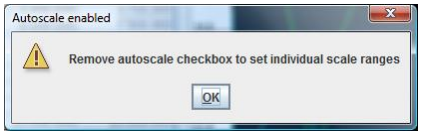
When the entered values is too low for the active scale, a message is displayed showing the maximum value.



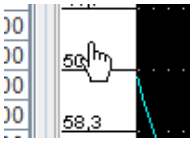
When the entered values is too high for the active scale, a message is displayed showing the maximum value.



Clicking on the scale area, when auto-scaling is enable notifies the user, to remove first the auto-scaling option.



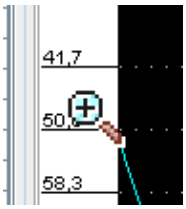
The scale ranges can also be set using the mouse. When the mouse is positioned on a scale area, the mouse cursor turns into a pointing hand.



Two modes are available:

- **Zoom**-in our zoom-out the scale.
- **Move** the scale up or down.

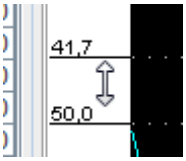
Zoom-mode



Pressing the **left** mouse button turns the mouse cursor into a loupe. Moving the mouse with pressed left button inside the scale area up or down increases or decreases the scale range.

… hard to explain - simply try it.

Move-mode



Pressing the **right** mouse button turns the mouse cursor into a double arrow. Moving the mouse with pressed right button inside the scale area up or down moves the scales range up or down up to the values given by the selected driver.

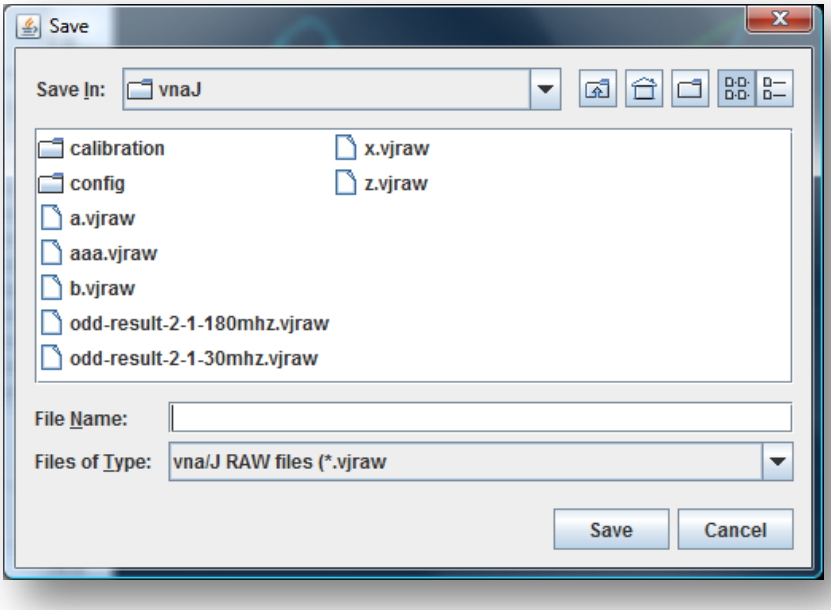
… hard to explain - simply try it.

Saving measured data

Selecting the SAVE button

saves the currently displayed data to an external file.

The location of the file can be selected in the default SAVE dialog:



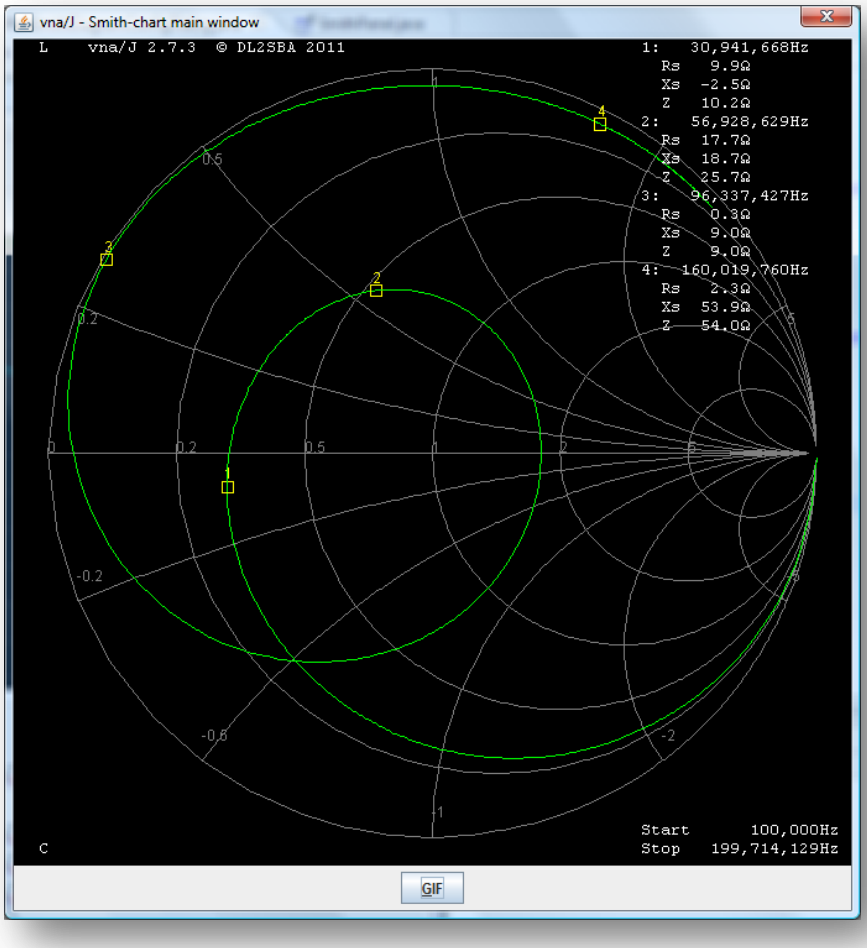
This data then can be later displayed in the analysis dialog (See chapter "Data analysis" on page 61) or reloaded into the diagram area to do cursor measurements etc.

Note: The exported files of type **vjraw** are simple XML-files which are compressed in GZIP-format. Adding the extension **.gz** to a file enables i.e. WINZIP to open the file correctly and show the contained XML-data.

Display Smith-chart

Selecting the Smith-chart checkbox

opens a non-modal dialog, that displays the current measured data inside a Smith-chart:



If the markers are selected in the main window, a small rectangle in the marker colour is drawn on the smith-chart and the configured marker data is printed on the right diagram side.

***Note**: The relevant data for a Smith-chart is only available in reflection mode. In transmission mode, the analyser is not capable providing the relevant data.*

*The data in the smith-chart is updated whenever a **new** scan is done in the main window.*

The marker data is updated, when the markers are moved in the main window.

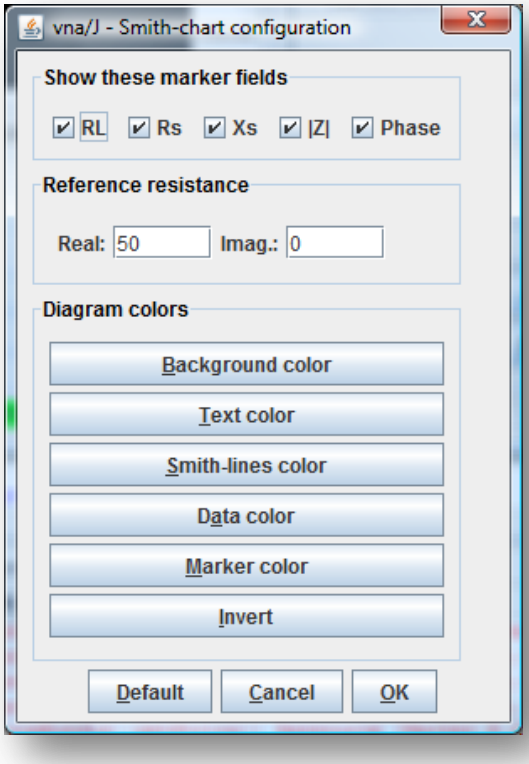
Export to GIF-file

The diagram can be exported using the GIF-button right to the detail data. Selecting this button, opens the default SAVE default where the name and location of the diagram can be set.

The size (number of x/y-pixels) of exported image is determined by the size of the Smith-chart inside the dialog. To get higher resolution, simply resize the dialog to the desired size and then use the export function.

Configuration

The Smith-chart can be configured by clicking inside the diagram.



Here the data shown for each marker in the smith-chart can be configured. The marker-name and -frequency is always printed.

Further the reference resistance can be changed, for which the chart is calculated.

The colour of each element on the diagram can be selected using the buttons in the "Diagram colors" box.

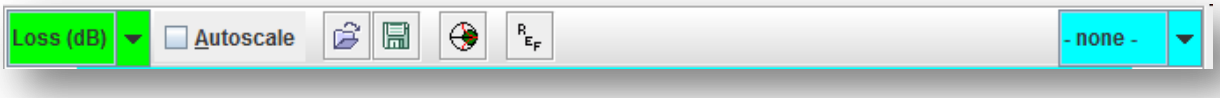
***Note**: The changed reference resistance is used only on for the **NEXT** scan.*

Reference data

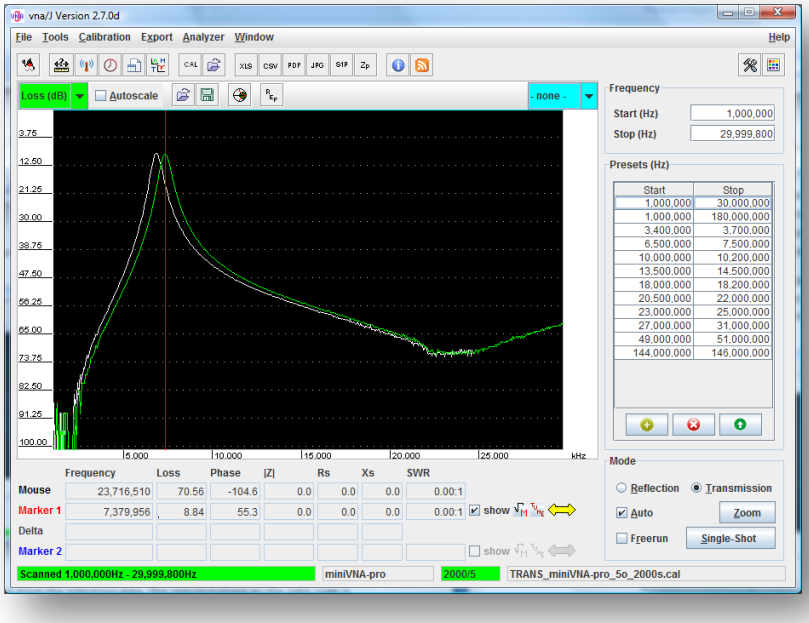
To compare previously measured data with the current measurement, a reference trace can be loaded and displayed in the image panel

Initially no reference data is loaded. This is shown in with crossed-button in the toolbar.

When reference data is loaded, the cross is removed from the toolbar button:



and the reference trace is shown in the main diagram in the selected colour (here WHITE) after the next scan.

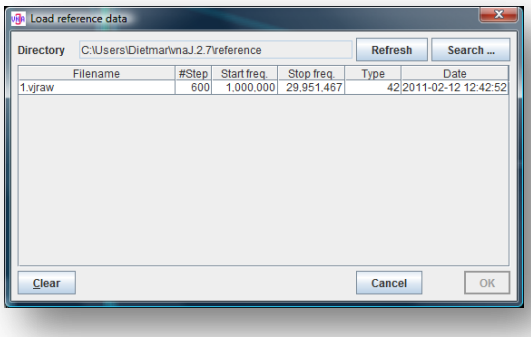


Only the left scale value is drawn from the reference data. The selected phase on the right scale is only drawn from the measurement data.

Note: *The reference data is drawn together with measured data. So after loading a new reference data set, it is displayed after the next executed scan.*

First the reference data is drawn and then the measured data. This means, if the reference data is "covered" by the measured data, no reference trace is visible!

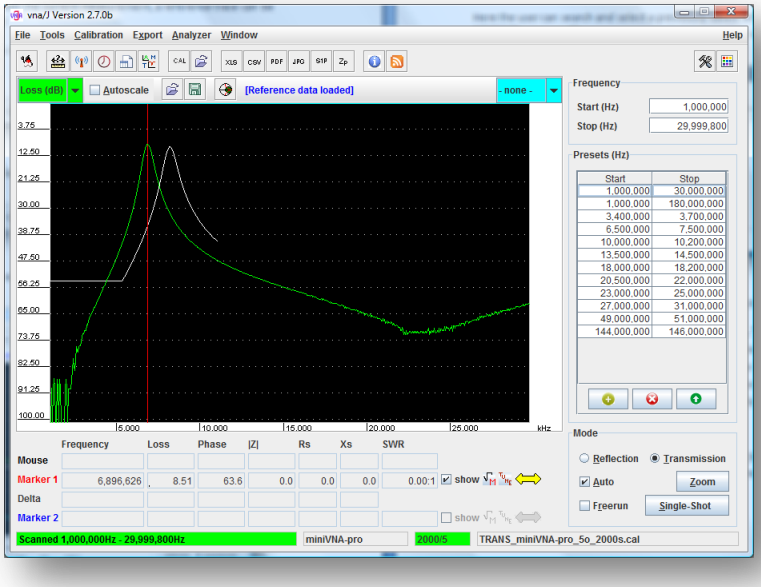
Clicking the reference button opens the "Calibration load dialog". Here the user can search and select a previously saved reference data set (see chapter "Saving measured data" on page 17) or remove the previously loaded reference data set.



In the list all found reference datasets are displayed which were found in the selected directory.

- The directory can be changed using the "Search…" button.
- The content of the selected directory can be re-read using the "Refresh" button
- When a valid reference data set is selected in the list, the "OK" button is enabled.
- Selecting the "OK" button loads the selected reference dataset into diagram panel.
- Selecting the "Clear" button removes a previously loaded reference data set.

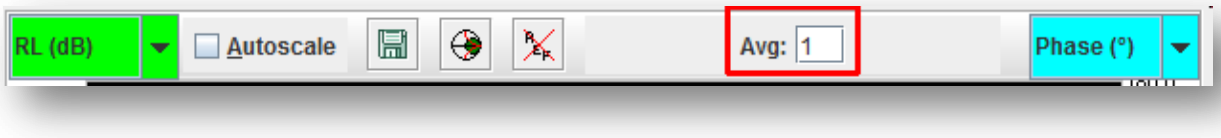
When the loaded reference data does not completely cover the measurement range, only the available reference data is drawn. As shown here the reference data is only available from 5.3MHz to 11.3MHz and the measurement scan ranges from 1MHz to 30MHz:



***Note**: Displaying a directory with a lot of reference data files in, can take some time, as every dataset has to be completely read to retrieve all the required information.*

Average calculations

In the scale select panel, there is the "AVG" input field



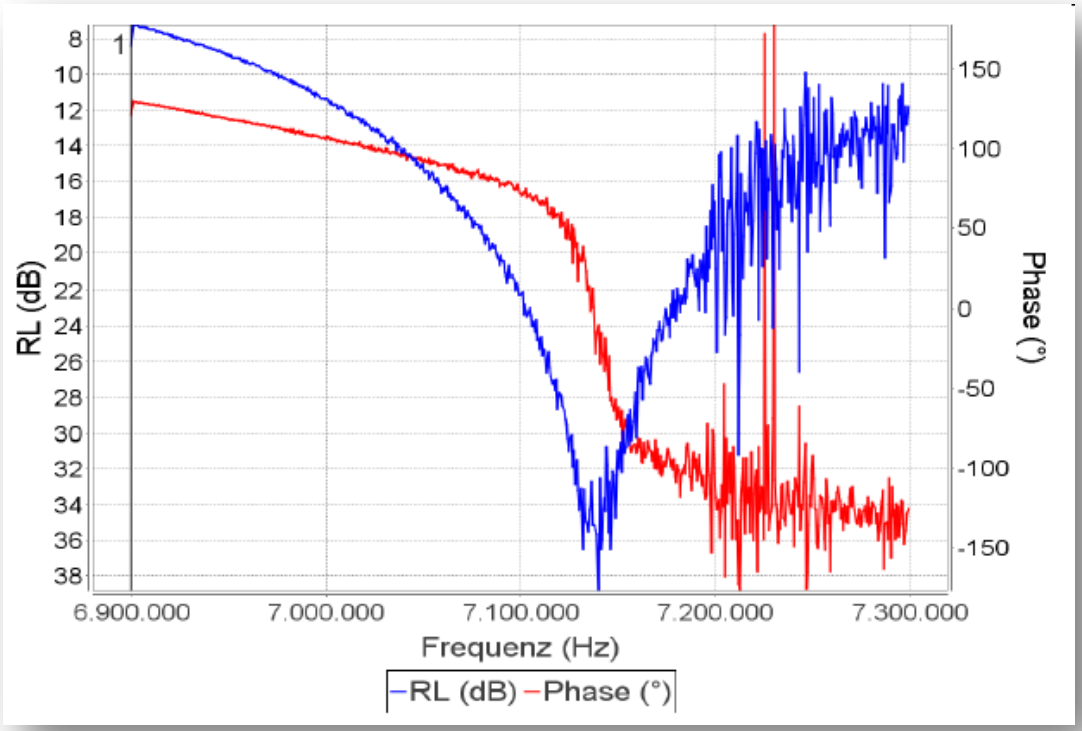
for the number of iterations, which should be used during scans.

- A number of 1 means, that each scan is directly processed and displayed in the diagram panel.
- A number larger than 1 means, that all measured values RAW-values from the analyser are **n-times** summed up and then divided by **n.**

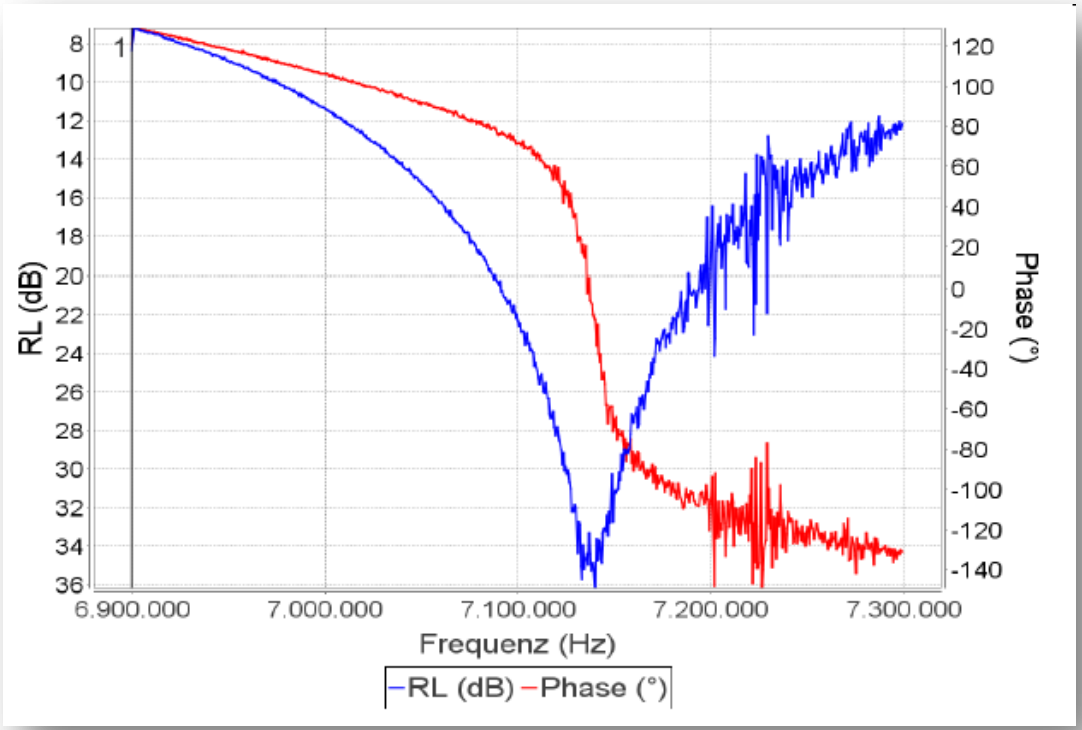
This help i.e. to reduces the influence of strong BC stations in the 40m band.

Remarks: *Averaging numbers from 1 to 9 are valid*
The time for executing a scan with Avg=2 is twice the time of a Avg=1 scan and so o
The samples are provided by Detlef, DL7IY and are measured using a miniVNApro and a large cage-antenna (Reuse).

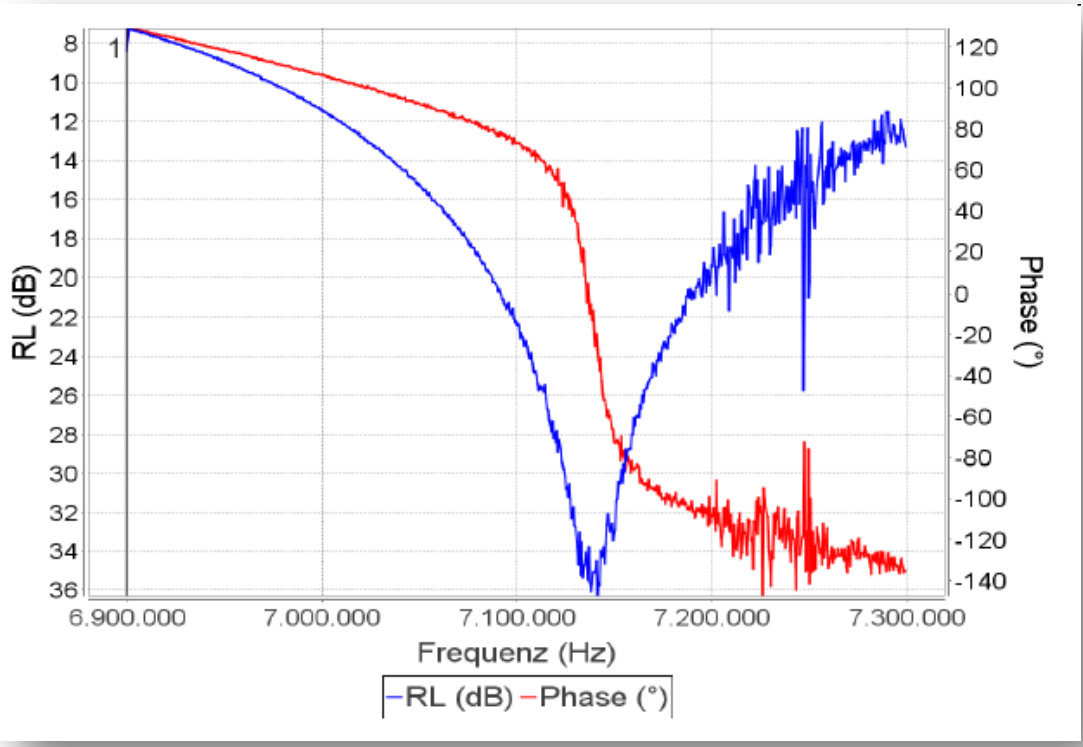
Average 1



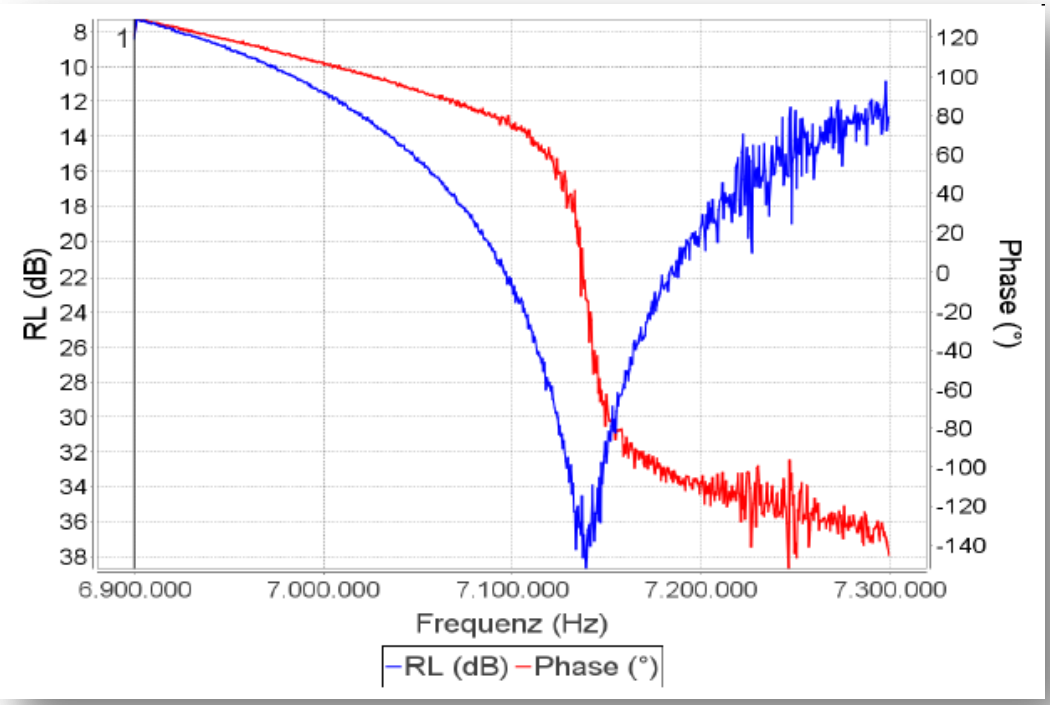
Average 2



Average 4



Average 8



Marker panel

The marker panel displays the actual data of the five markers:

	Frequency	RL	TL	Phase	|Z|	Rs	Xs	SWR
M	135,145,120	3.93	0.00	58.4	83.7	40.3	73.4	4.50:1
1	22,768,288	21.94	0.00	108.9	47.5	46.9	7.2	1.17:1
Δ	18,809,856	5.63	0.00	10.7	4.4	5.4	4.2	
2	41,578,144	16.30	0.00	119.6	43.1	41.6	11.3	1.36:1
3	52,912,288	12.67	0.00	123.7	38.9	36.0	14.7	1.61:1
4	87,397,024	-0.70	0.00	170.1	4.8	2.0	4.3	24.70:1

Image 1 - marker panel

Mouse Displays values, when the mouse cursor is inside the image panel.

Marker 1 Can be set by moving the mouse into the diagram panel and clicking the **left** mouse button.
It can be moved using the mouse-wheel.

Delta Calculates the absolute differences between most of the Marker 1 and Marker 2 data.

Marker 2 can be set by moving the mouse into the diagram panel and clicking the **left** mouse button while pressing the **Shift**-key.
It can be moved using the mouse-wheel while pressing the **Shift**-key.

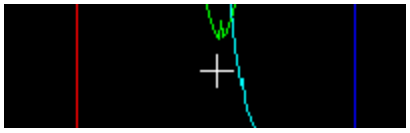
Marker 3 can be set by moving the mouse into the diagram panel and clicking the **left** mouse button while pressing the **Control**-key.
It can be moved using the mouse-wheel while pressing the **Control**-key.

Marker 4 can be set by moving the mouse into the diagram panel and clicking the **left** mouse button while pressing the **Shift-Control**-keys.
It can be moved using the mouse-wheel while pressing the **Shift-Control**-keys.

Operations

Un-checking the option button **right** to the marker, removes the marker from the diagram panel.

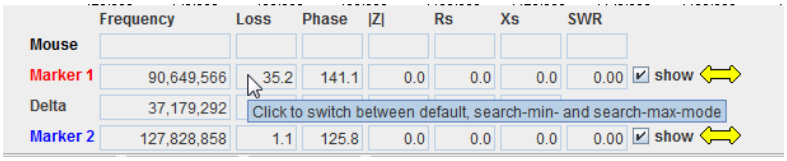
When the mouse is positioned inside the diagram panel, the current values at the mouse position are displayed in the marker named **M.**



The LOSS, PHASE and SWR fields support search mode.

When the search mode is selected, the marker is automatically positioned on the maximum- or minimum-value in the diagram.

The search mode is selected by clicking on the respective fields in marker 1 or marker 2.

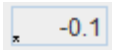


Two search-modes are supported:

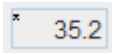
- min-search mode

- max-search mode

Min-search mode is indicated by a small * at the lower-left corner of the field:



Max-search mode is indicated by a small * at the upper-left corner of the field:

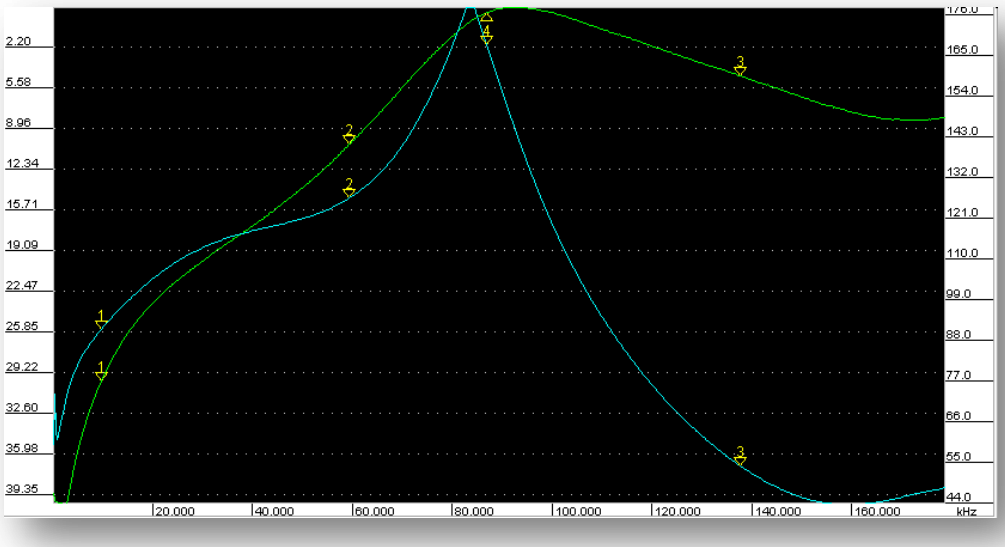


Standard-mode of the marker is enabled, if no * is visible in the field.

Opens or closes the marker math dialog for this marker

Opens or closes the tune dialog for this marker

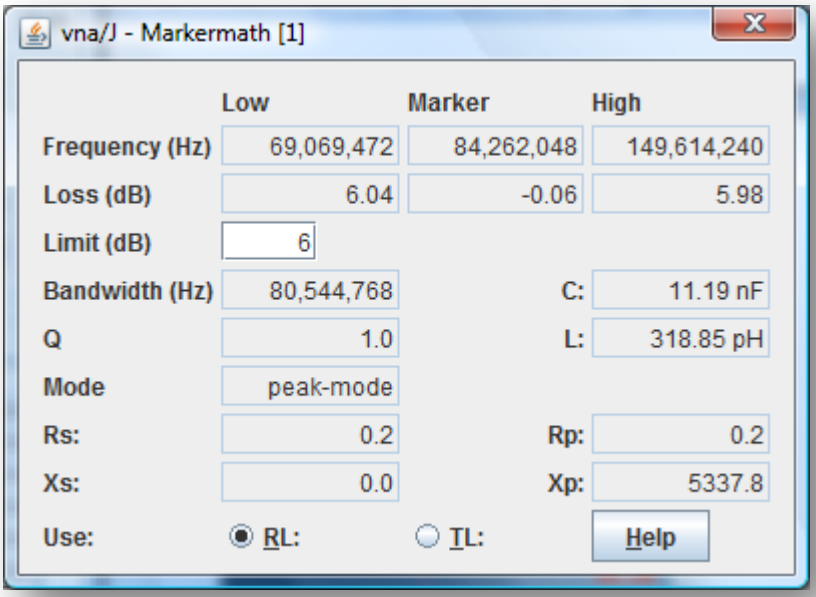
Markers are shown in the diagram as small triangles:

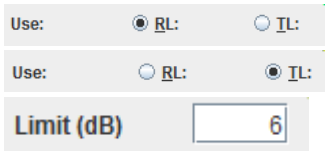


Marker-math dialog

This dialog can be used i.e. to tune an antenna filter to a given centre frequency an a defined bandwidth.

The marker-math dialog is bound to one marker. The data displayed in this dialog is the data of this marker.





To use the reflection loss data for calculation, select this radio button.

To use the transmission loss data for calculation, select this radio button.

Enter the desired bandwith.

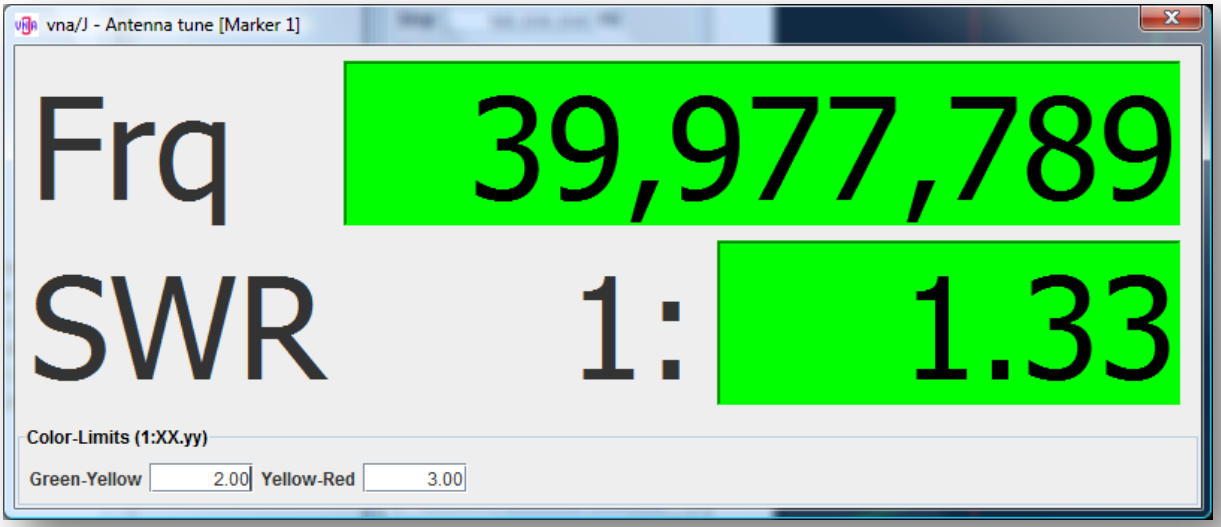
With this dialog, it is possible to measure i.e. the 6dB bandwidth of a bandpass or notch filter.

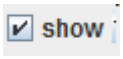
For a simple notch filter the procedure is described in chapter "Transmission mode" on page 93.

Remark: *The data in the dialog is updated **after** a scan!*

Tune-dialog

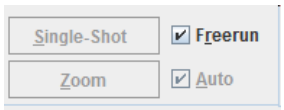
This dialog can be used i.e. to tune an antenna when the PC display is some distance away. The tune dialog is bound to one of the two markers. The data displayed in the tune-dialog is the data of this marker.





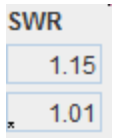
The dialog is available, when the corresponding marker is visible.

The dialog can be displayed by clicking on the toggle button.
The first click opens the dialog, a second click removes the dialog. The position, size and the entered limits are stored separately for each tune dialog.



For a continuous reading ensure, that the free-run mode is enabled.

If you want to display the SWR at a **fixed frequency**, ensure, that the marker search mode is **not enabled**, means no small star is shown in the marker fields.

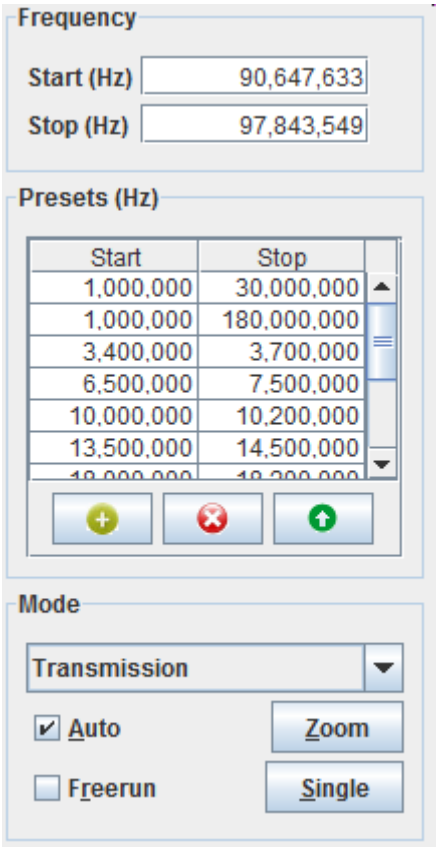


If you want to display the minimum or maximum SWR value in the given scan range, enable the marker search mode for the SWR marker field.

The background colour of the frequency and SWR fields can be controlled by these two fields.
The background is green, if the SWR is below the entered value in field **Green-Yellow**. The background is yellow, if the SWR is between **Green-Yellow** and **Yellow-Red**. The background turns red, if the SWR is above the value in the field **Yellow-Red.**

Remark: The Close icon in the dialog does not work!

The control panel



Frequency

In the frequency control panel, you can enter the desired start and stop frequencies for the scan.

The frequencies entered must be between the lower and upper maximum which the selected analyzer device can handle. The range can be checked using the driver info (see chapter …).

You can enter the frequencies in Hz, kHz or MHz

Examples:	144750000	144.750.000 Hz
	144m	144.000.000 Hz
	7200k	7.200.000 Hz

The start frequency should be below the stop frequency.

By double-clicking with the left mouse button on an entry in the presets list, you can quickly set the start/stop frequencies to the desired range. A selected list entry can also be used clicking the  button.

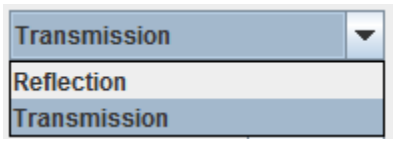
Entries in the presets list can be deleted by selection an entry in the list and clicking on  .
A currently entered frequency can be added to the list clicking on the  button.

The presets for the common HAM bands are loaded at first application start.

The preset list is stored to the file system and loaded on application start.

Mode

The available modes for the selected analyser type are displayed in the dropdown combo box.



Selecting the checkbox enables the continuous measurement with the given parameters in the frequency and mode group. If the checkbox is deselected, the scanning of the VNA stops and the pushbutton for single shot is active.

During continuous scanning, most of the menu entries and toolbar buttons are disabled to ensure a correct measurement.

The freerun-mode can be started using the **F11**-key.

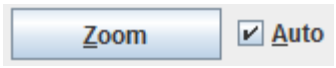
Clicking the button triggers a single scan of the analyzer.

A single scan can be also triggered using the **F12**-key.

Zoom

There are two types of zoom modes supported:

- Min-Max-zoom
- Percentage zoom

If the AUTO checkbox right to the zoom button 

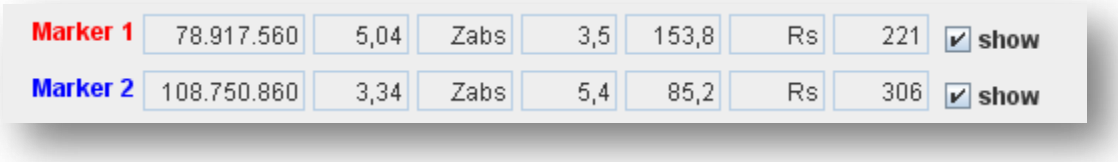
is checked, the analyzer automatically performs a scan after the ZOOM button was pressed.

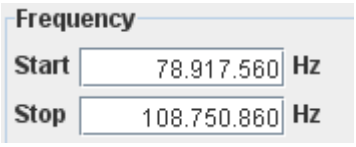
Min-Max-zoom

When both markers are visible inside the diagram, clicking the 

button sets the start and stop frequencies to the range selected by the markers 1 and 2.

Setting the markers to



And clicking the zoom button sets the scan range to 

.

Percentage-zoom

When only one marker is visible in the diagram, clicking the zoom button zooms into the current diagram with:

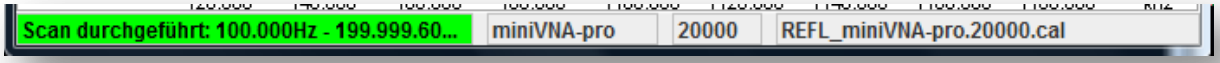
- The centre frequency is the marker frequency
- A frequency range of 20% of the current frequency range.

For example:

- Currently selected scan range from 1MHz to 100MHz. Marker is set to 60MHz.
- Now press ZOOM.
- New scan range is 50MHz to 70MHz with a centre frequency of 60MHz.

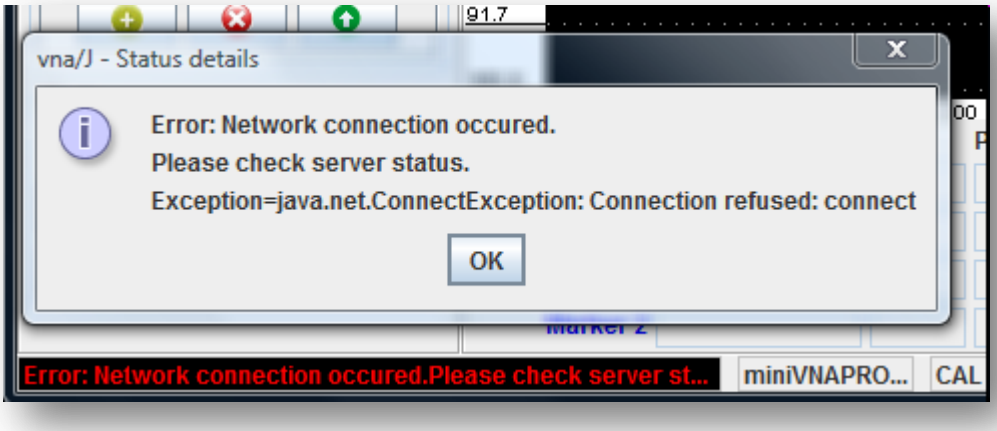
The status bar

The status bar at the bottom of the screen contains four sections:



1. In the leftmost section, tool tips for the menu entries and status information of running data acquisitions are displayed. Green or white background for info messages. Red for errors.
2. The selected type of the analyser is displayed here.
3. When calibration data is loaded, here the number of calibration steps is displayed. If no data is loaded UNCAL is displayed.
4. In the rightmost section, the filename of the currently loaded main calibration dataset shown.

Remark: If any text displayed in the status bar is not completely visible, simply click on it with the mouse to display a popup dialog, displaying the complete message.



The tool bar

The tool bar below the menu bar contains useful shortcuts to commonly used commands.

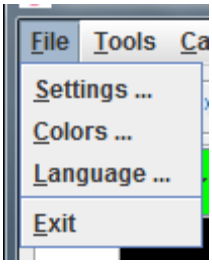
Icon	Description	Menu equivalent
	Exit the application.	FILE/EXIT
	Opens the cable length measurement dialog. For details see chapter"Cable length measurement" on page 56.	TOOLS/CABLELENGTH
	Opens the generator dialog. For details see chapter "Generator" on page 56.	TOOLS/GENERATOR
	Opens the scheduler dialog. Same as menu For details see chapter "Scheduler" on page 57.	TOOLS/SCHEDULER
	Opens the data analysis dialog. For details see chapter "Data analysis" on page 61.	
CAL	Opens the calibration dialog. For details see chapter "Calibration" on page 71	CALIBRATION/LOSS.
	Opens the load calibration dialog. For details see chapter "Loading existing calibration data" on page 78.	CALIBRATION/LOAD
XLS CSV PDF JPG XML S1P	Exports the measured data to a file in the selected format. For details see chapter "Export" on page 38	MENU/XLS, /CSV, /PDF, /JPG, /S-parameter MENU/Zplots
	Opens the export settings dialog. For details see chapter "Settings" on page 38.	EXPORT/SETTINGS
	Opens the driver info dialog.	ANALYZER/INFO
	If a network driver is selected, the network configuration dialog can be displayed using thing button.	ANALYZER/NETWORK
	Open the application settings dialog. Same as menu. For details see chapter "Configuration" on page 83.	FILE/SETTINGS
	Configure the colours of the diagram area.	FILE/COLORS

The menu bar

File

Here the general settings dialog, the language and the colour configuration dialog can be started.

The application can be closed using the EXIT entry.



Settings

The settings dialog is displayed. See chapter "Editing" on page 85 for details.

Colours

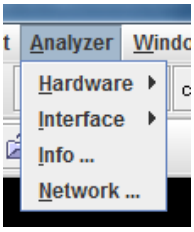
The colour configuration dialog is displayed. See chapter "Colour settings" on page 87 for details.

Language

The language configuration dialog is displayed. See chapter "Language settings" on page 88 for details.

Analyzer

The configuration of the analyzer hardware can be found in the analyzer menu.

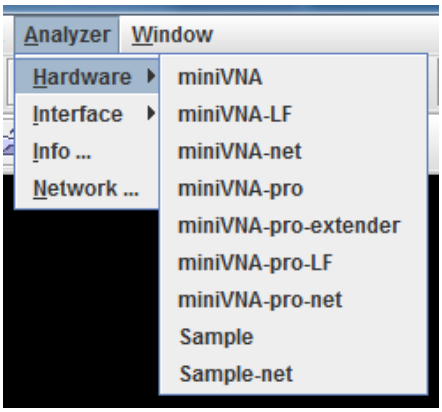


Hardware

Currently these hardware drivers are available for vna/J:

- ***mini RADIO SOLUTIONS miniVNA***.
- ***mini RADIO SOLUTIONS miniVNA pro***
- a ***sample*** driver for testing without hardware.

Other listed drivers may have experimental status!

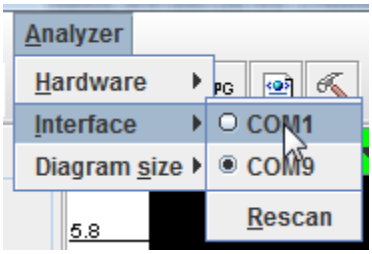


Interface

After selecting the correct hardware, the driver performs a scan for available serial ports in the system.

The found ports are listed in this menu.

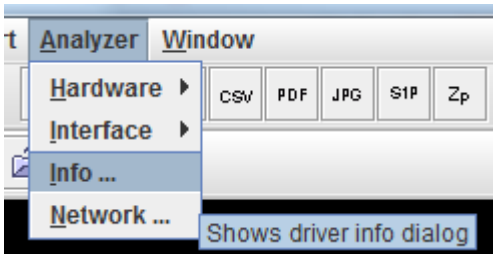
A rescan can be executed by clicking on the RESCAN menu entry. This may be useful when connecting the analyzer after application start to the computer.



Remark: *The name of the interfaces found on the systems depends on the operation system running.*

Info

After selecting the correct hardware, a driver information dialog is available, which shows the hardware specific parameters.

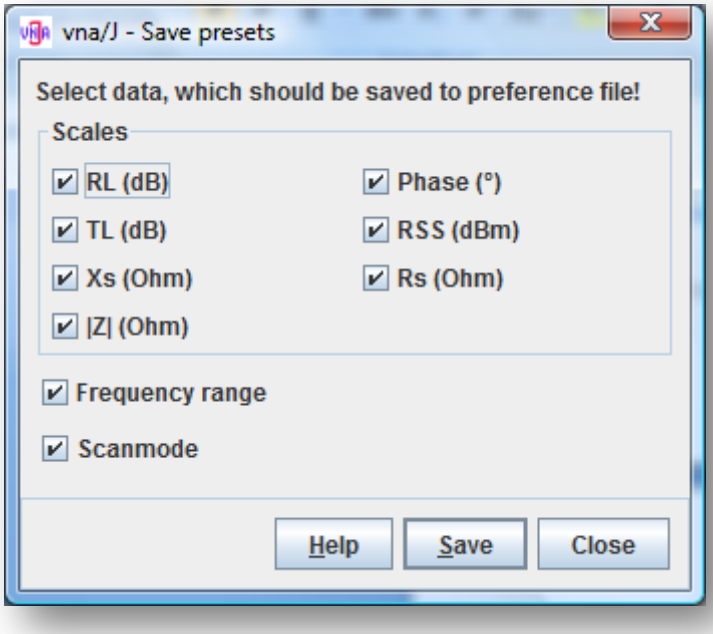


Depending on the selected driver a specific dialog is displayed. Please consult the driver guide for the various analysers.

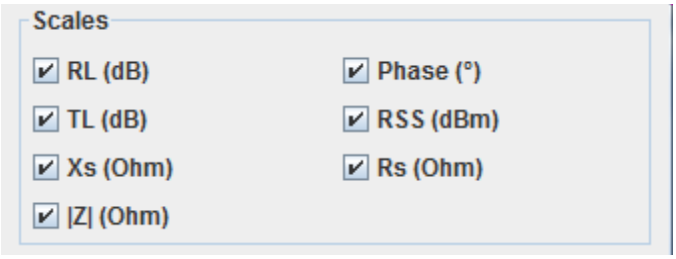
Presets

Save ...

Selecting the menu entry PRESETS/SAVE opens this dialog:



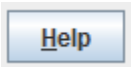
Here the user can select which data should be saved for later recall:



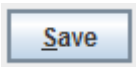
The current minimum and maximum values of the selected scales are saved.

The frequency range entered in the frequency section of the data panel.

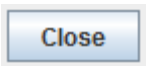
The currently selected mode in the data panel.



Displays a help dialog.



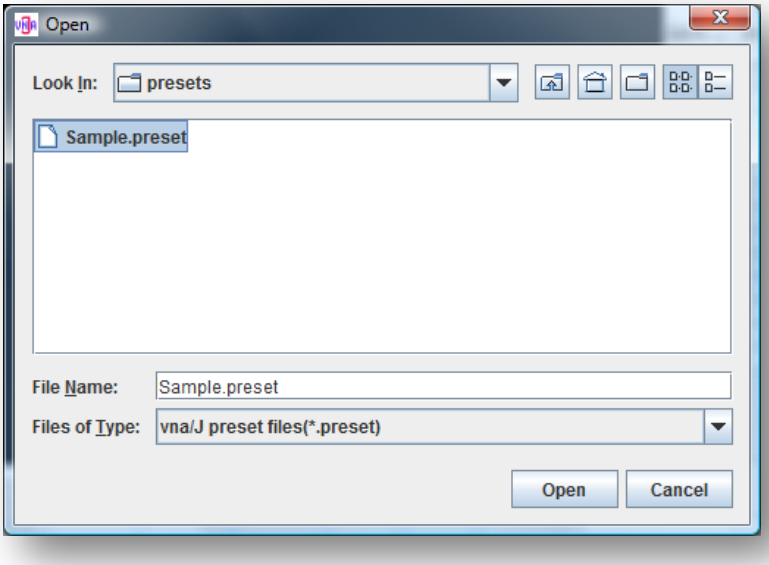
Open the file save dialog where the user enter a new target file name or select an existing file to overwrite.



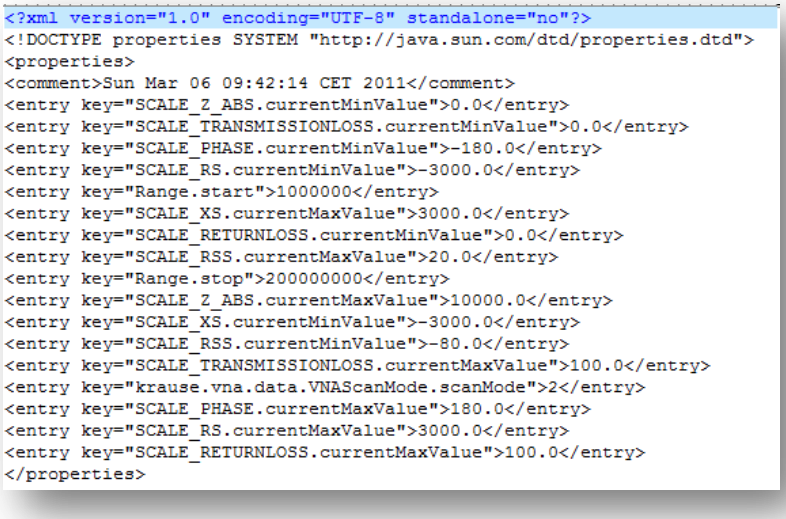
Closes this dialog without saving data.

Load …

A simple file selection dialog is opened and the user can select an existing preset file to load.



Internal



```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
<comment>Sun Mar 06 09:42:14 CET 2011</comment>
<entry key="SCALE_Z_ABS.currentMinValue">0.0</entry>
<entry key="SCALE_TRANSMISSIONLOSS.currentMinValue">0.0</entry>
<entry key="SCALE_PHASE.currentMinValue">-180.0</entry>
<entry key="SCALE_RS.currentMinValue">-3000.0</entry>
<entry key="Range.start">1000000</entry>
<entry key="SCALE_XS.currentMaxValue">3000.0</entry>
<entry key="SCALE_RETURNLOSS.currentMinValue">0.0</entry>
<entry key="SCALE_RSS.currentMaxValue">20.0</entry>
<entry key="Range.stop">200000000</entry>
<entry key="SCALE_Z_ABS.currentMaxValue">10000.0</entry>
<entry key="SCALE_XS.currentMinValue">-3000.0</entry>
<entry key="SCALE_RSS.currentMinValue">-80.0</entry>
<entry key="SCALE_TRANSMISSIONLOSS.currentMaxValue">100.0</entry>
<entry key="krause.vna.data.VNAScanMode.scanMode">2</entry>
<entry key="SCALE_PHASE.currentMaxValue">180.0</entry>
<entry key="SCALE_RS.currentMaxValue">3000.0</entry>
<entry key="SCALE_RETURNLOSS.currentMaxValue">100.0</entry>
</properties>
```

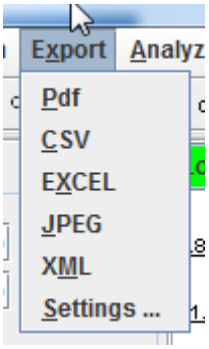
The presets are saved as JAVA property file in XML encoding.

Export

Currently the application supports 4 ways to export the measurement data into an external files:

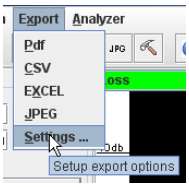
Format	Comment
PDF	Exports the currently displayed diagram along with the optional displayed markers
CSV	Exports the pure numerical data into a comma-separated file
EXCEL	Exports the pure numerical data into Microsoft© EXCEL Worksheet.
JPEG	Exports the currently display diagram into a JPEG-compatible file or to the clipboard.
XML	Exports the currently displayed data into an XML compatible file.
S1P	Export the currently displayed data into an S-parameter (S1P) comatible file.

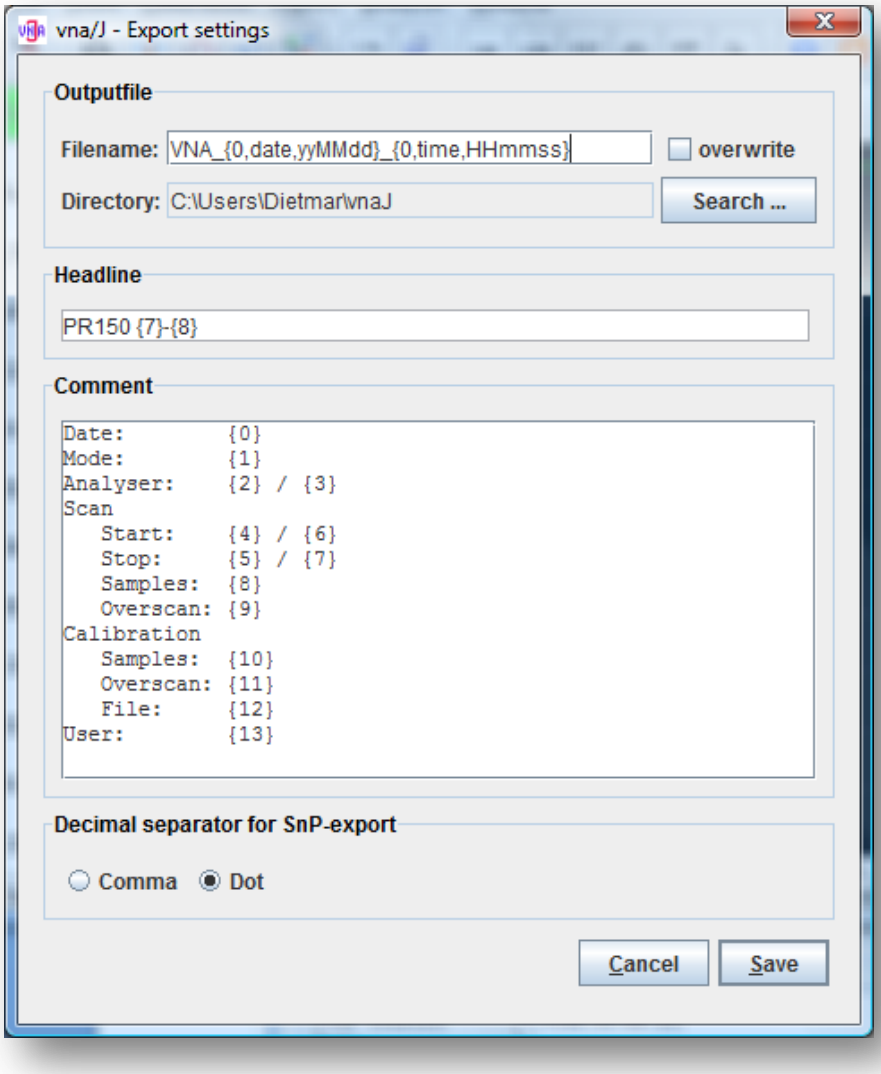
The export functions are available via the EXPORT menu or the corresponding toolbar buttons:



Settings

The settings dialog sets common parameters for all export formats.

It can be reached via the toolbar button  or the menu entry 



Filename

Here you can enter the name for the exported files. Depending on the export type, the correct file-name extension (XLS, PDF, JPG and CSV) is appended to this name.

As a special feature, the filename supports parameter replacement. The following parameters are supported:

{0} timestamp (see next chapter)
{1} transmission or reflection mode
{2} short name of the analyser
{3} long name of analyser
{4} start frequency for the scan (without thousand-separators)
{5} stop frequency for the scan (without thousand-separators)
{6} start frequency for the scan (with thousand-separators)
{7} stop frequency for the scan (with thousand-separators)
{8} number of samples of current scan
{9} number of over scans used for this scan
{10} number of samples of used calibration data set
{11} number of over scans contained in this calibration data set
{12} filename of the used calibration data set
{13} user login ID from operation system

Timestamp

When calling the export function, the current timestamp is provided in parameter {0}. Here are some formatting examples for this timestamp 2010-02-15 17:12:45:

Format	Result
VNA_{0,date,yyMMdd}	VNA_100215.xls
VNA_{0,time , HHmmss }	VNA_171245.xls

The following replacement parameters are currently supported:

Shortcut	Represents	Example	Shortcut	Represents	Example
y	Year	1996; 96	H	Hour in day (0-23)	0
M	Month in year	07	k	Hour in day (1-24)	24
w	Week in year	27	K	Hour in am/pm (0-11)	0
W	Week in month	2	h	Hour in am/pm (1-12)	12
D	Day in year	189	m	Minute in hour	30
d	Day in month	10	s	Second in minute	55
F	Day of week in month	2	a	Am/pm marker	PM
E	Day in week	Tuesday			

Directory

Here the directory is displayed, into which all export files are written. The directory can be selected using the SEARCH button.

Overwrite

If the checkbox OVERWRITE is set, an existing file with the same name as the file to be created is overwritten.

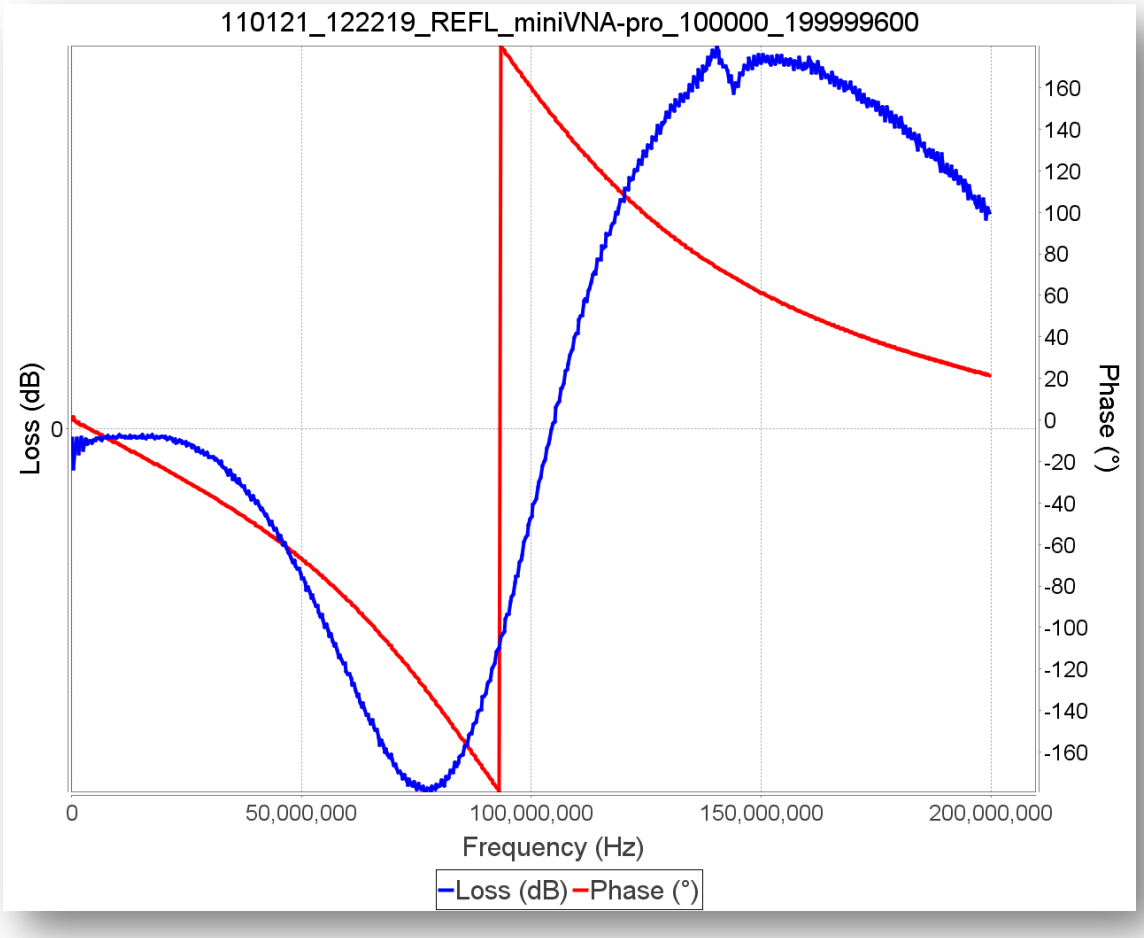
If the checkbox OVERWRITE is not set, a message is shown and you are asked, whether you want to overwrite this file.

Note: *When a part of the filename is dynamic (i.e. inserted date or time parts) the overwrite warning is only shown, when exactly the same filename is already existing at the export location.*

If you plan to use the scheduler to generate automatically export, ensure, that this checkbox is not set or that every time the scan runs, a different filename is generated!

Title

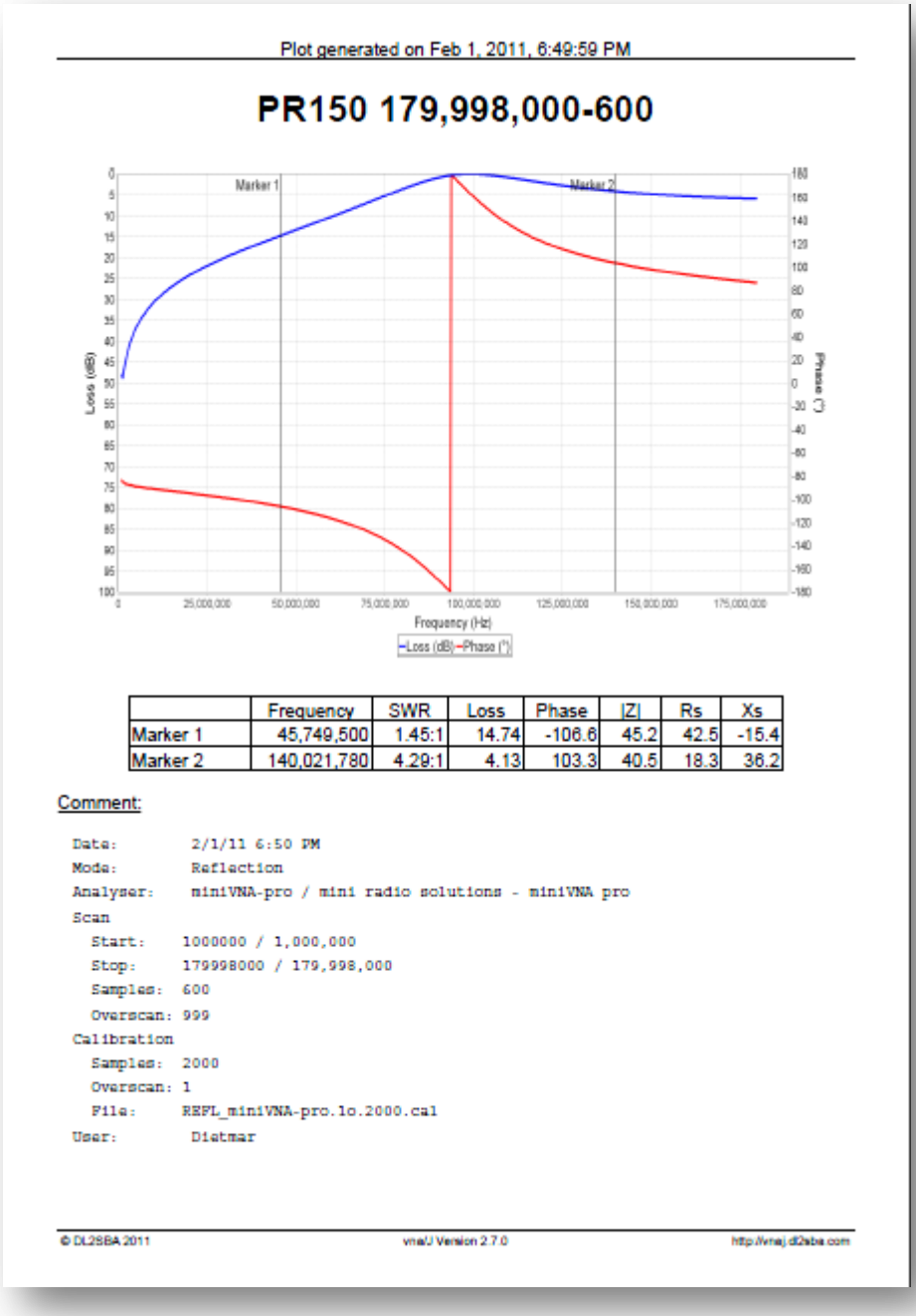
Here you can enter a diagram title which is displayed in the head section of the exported diagrams (JPG and PDF format).



The same replacement parameters are supported as for the filename field.

Comment

Here you can enter a detailed comment for the measurement which is printed in the generated PDF-document below the diagram.



Plot generated on Feb 1, 2011, 6:49:59 PM

PR150 179,998,000-600

	Frequency	SWR	Loss	Phase	|Z|	Rs	Xs
Marker 1	45,749,500	1.45:1	14.74	-106.6	45.2	42.5	-15.4
Marker 2	140,021,780	4.29:1	4.13	103.3	40.5	18.3	36.2

Comment:

```
Date:        2/1/11 6:50 PM
Mode:        Reflection
Analyser:    miniVNA-pro / mini radio solutions - miniVNA pro
Scan
  Start:     1000000 / 1,000,000
  Stop:      179998000 / 179,998,000
  Samples:   600
  Overscan:  999
Calibration
  Samples:   2000
  Overscan:  1
  File:      REFL_miniVNA-pro.lo.2000.cal
User:        Dietmar
```

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For printing a fixed-space-font is used, so fundamental formatting can be done using SPACES. The same replacement parameters are supported as for the filename field.

CSV export

Currently only the values

- frequency
- phase and
- loss

are exported in CSV format.

For EN/US locales, the comma is used as value separator. The dot is used as decimal separator:

```
1  Frequency;Phase;Returnloss
2  100;120,7;9,5
3  733433;122,6;3,9
4  1466766;124,0;0,6
5  2200099;124,8;-3,1
6  2933432;124,8;-4,4
7  3666765;123,9;-4,6
8  4400098;122,5;-3,3
9  5133431;120,0;-1,1
10 5866764;117,0;2,0
11 6600097;113,1;6,7
12 7333430;108,6;10,4
```

For DE/CH/AT locales, the semicolon is used as value separator. The comma is used as decimal separator.

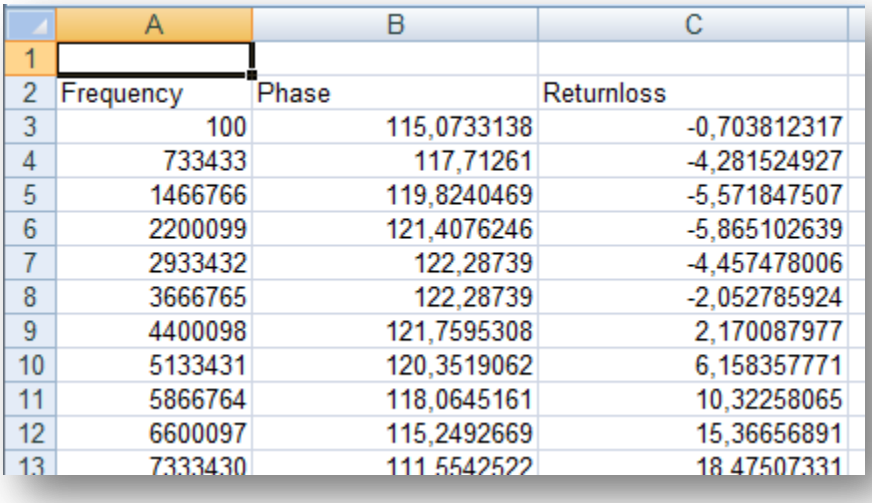
```
1  Frequency;Phase;Returnloss
2  100000;116,3;0,5
3  399833;5,1;0,0
4  699666;5,1;0,1
5  999499;7,2;0,1
6  1299332;9,9;0,1
7  1599165;12,5;0,2
8  1898998;15,1;0,2
9  2198831;17,9;0,2
10 2498664;20,4;0,4
11 2798497;23,0;0,5
12 3098330;25,7;0,6
```

Microsoft© Excel export

Currently only the values

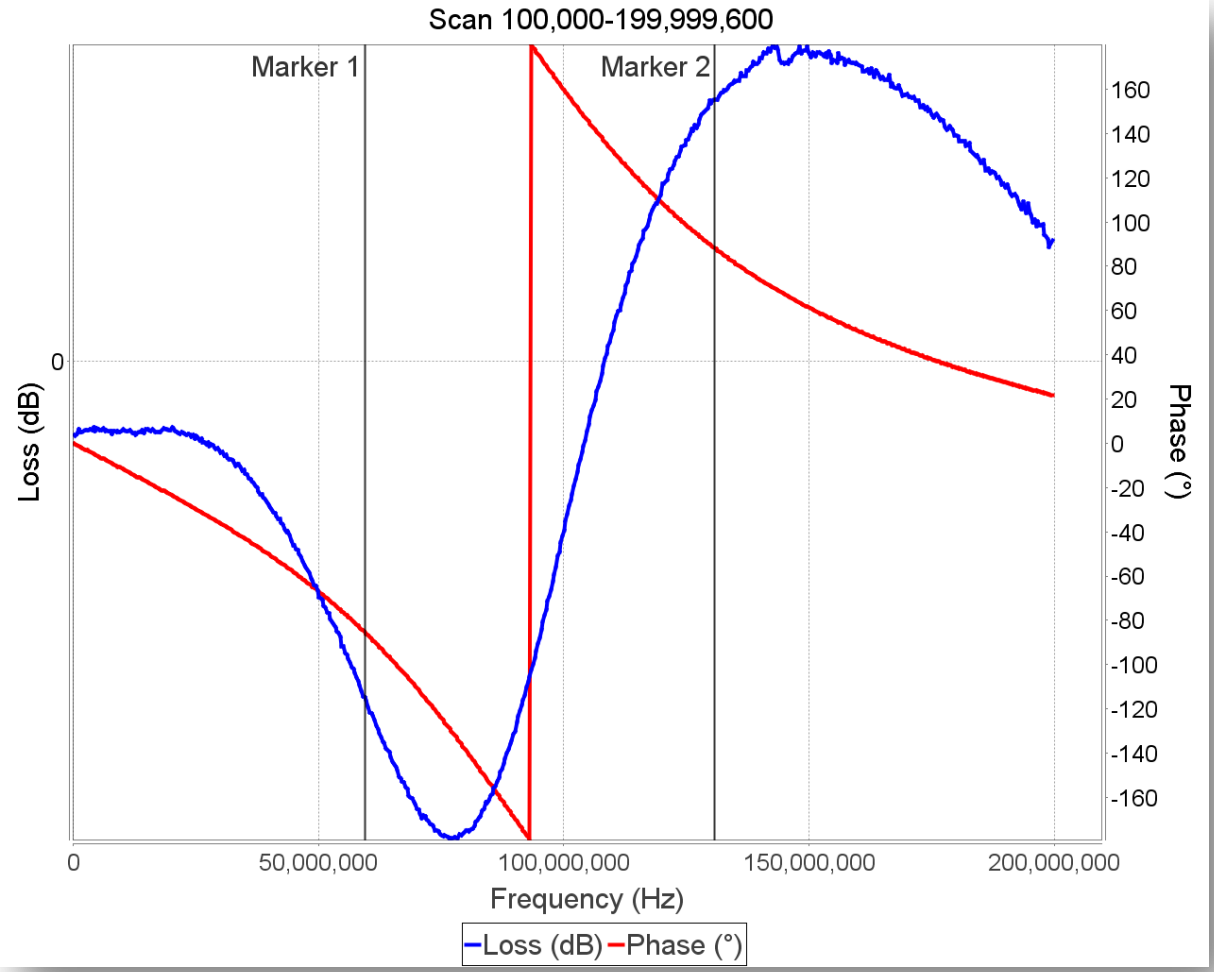
- frequency
- phase and
- loss

are exported in XLS format.



	A	B	C
1			
2	Frequency	Phase	Returnloss
3	100	115,0733138	-0,703812317
4	733433	117,71261	-4,281524927
5	1466766	119,8240469	-5,571847507
6	2200099	121,4076246	-5,865102639
7	2933432	122,28739	-4,457478006
8	3666765	122,28739	-2,052785924
9	4400098	121,7595308	2,170087977
10	5133431	120,3519062	6,158357771
11	5866764	118,0645161	10,32258065
12	6600097	115,2492669	15,36656891
13	7333430	111,5542522	18,47507331

Jpeg export



When selecting the menu item or clicking the toolbar button, the diagram is saved in JPEG-format to an external file.

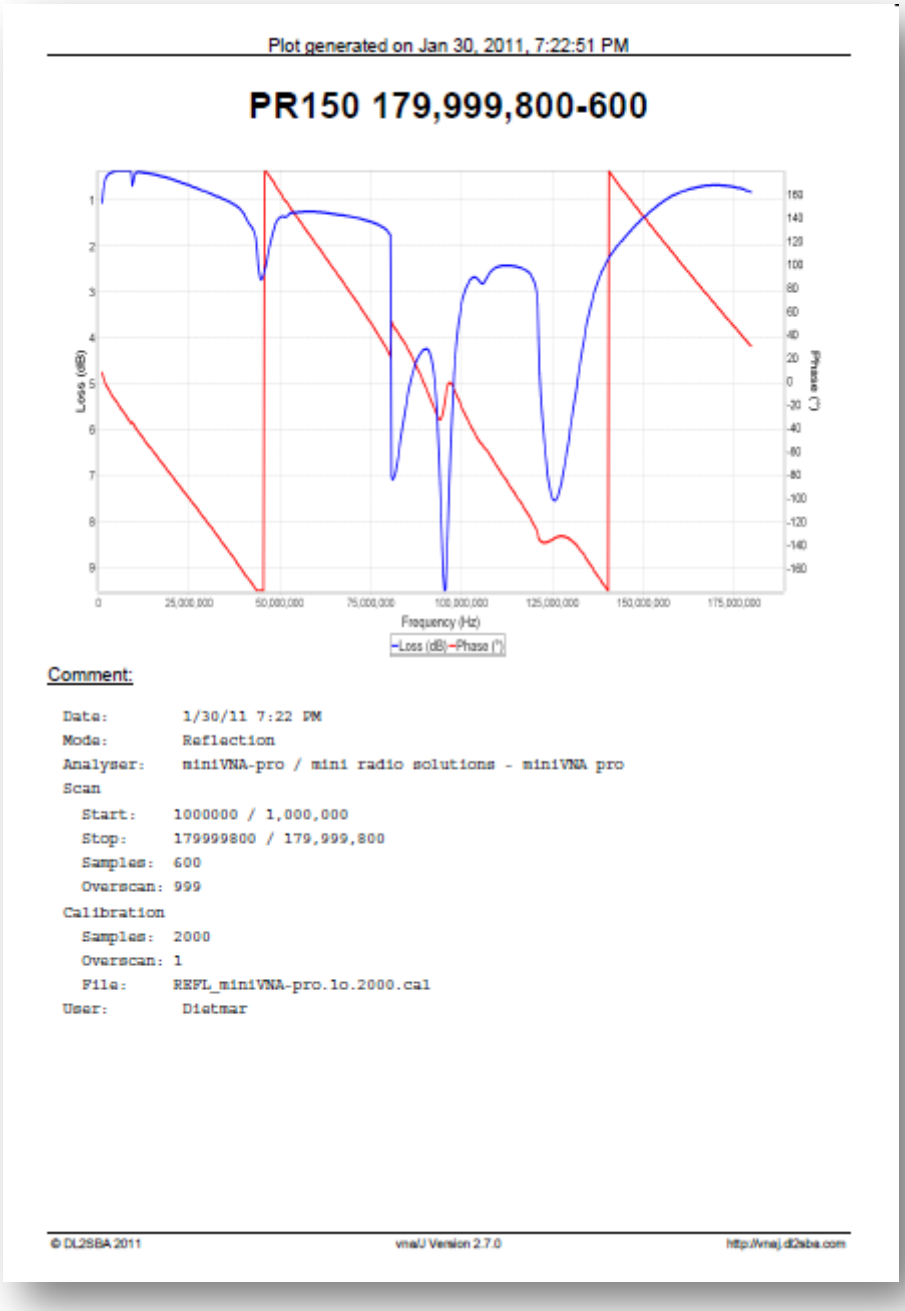
Hint: *When left-clicking the toolbar button with pressed shift-key on the keyboard, the image is copied to the systems clipboard as image. The image can be inserted in various applications like MS Word etc.*

Most of the screenshots in this document are created this way.

PDF export

Clicking the PDF toolbar button 

or selecting the menu entry EXPORT/PDF exports the current displayed data to a PDF document.



Plot generated on Jan 30, 2011, 7:22:51 PM

PR150 179,999,800-600

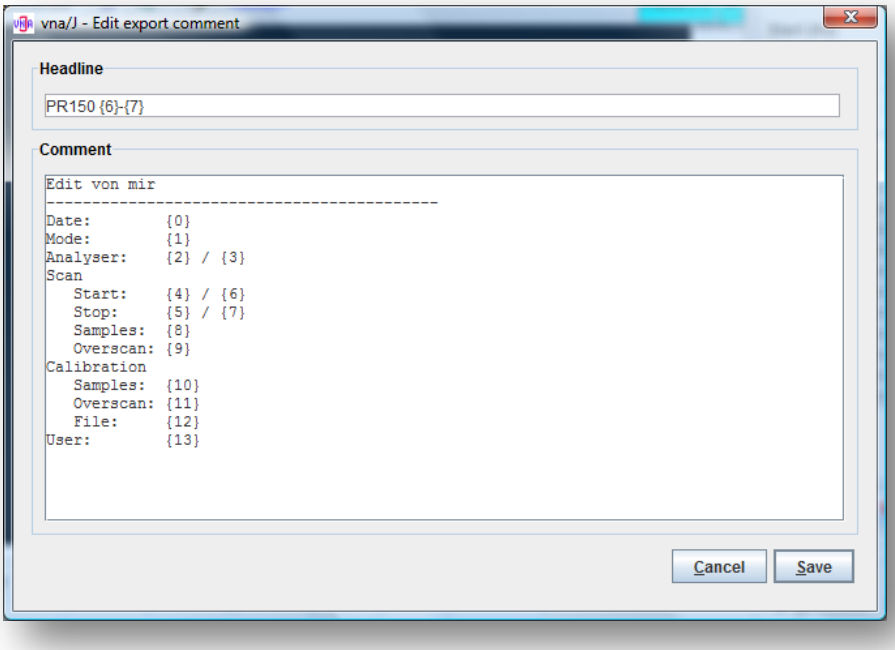
Comment:

```
Data:        1/30/11 7:22 PM
Mode:        Reflection
Analyser:    miniVNA-pro / mini radio solutions - miniVNA pro
Scan
  Start:     1000000 / 1,000,000
  Stop:      179999800 / 179,999,800
  Samples:   600
  Overscan:  999
Calibration
  Samples:   2000
  Overscan:  1
  File:      REFL_miniVNA-pro.lo.2000.cal
User:        Dietmar
```

Options

When the user presses the SHIFT-key and clicks on the toolbar button, the PDF document is generated according the EXPORT settings and then opened in the systems PDF reader application.

When the user presses the CTRL-key and clicks on the toolbar button, the edit dialog for the export text is displayed:



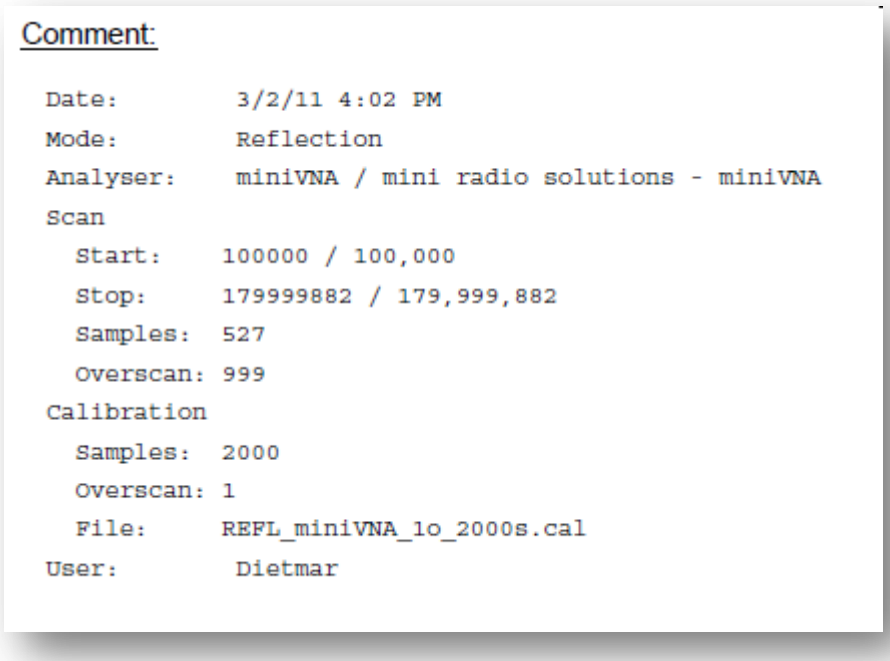
Here the comment and headline fields can be edited. Selecting the "CANCEL"-button aborts the PDF export. Selecting the "SAVE"-button stores the texts in configuration and continues with PDF generation.

In general the following behaviour is implemented:

Click on	Shift-Key	Ctrl-Key	Action
PDF-Icon	-	-	PDF generated Dialog with filename shown
PDF-Icon	Pressed	-	PDF generated PDF opened in system PDF-reader application
PDF-Icon	-	Pressed	Edit dialog opened Cancel aborts export. Save creates PDF and shows dialog with filename.
PDF-Icon	Pressed	Pressed	Edit dialog opened Cancel aborts export. Save creates PDF and opens generated PDF in system PDF-reader application

Sample

The comment can be formatted using the export settings described in chapter "Settings" on page 39.



To get this sort of comment field enter this in the export configuration dialog:

```
Date:         {0}
Mode:         {1}
Analyser:     {2} / {3}
Scan
   Start:     {4} / {6}
   Stop:      {5} / {7}
   Samples:   {8}
   Overscan:  {9}
Calibration
   Samples:   {10}
   Overscan:  {11}
   File:      {12}
User:         {13}
```

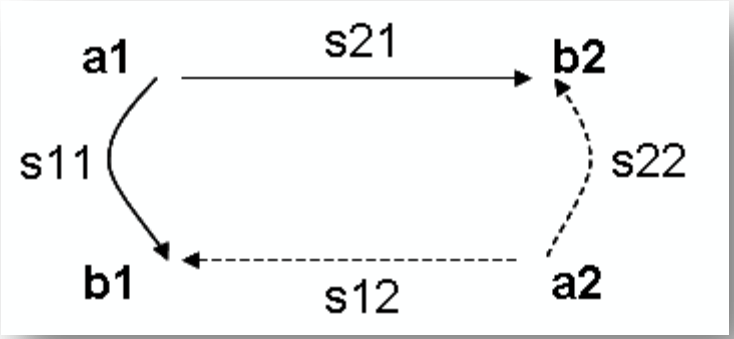
S-parameter export

This function can be used to export the measurement data for 3rd-party applications, that require data in Touchstone® File Format Specification format.

This format was published 2002 by Agilent. A detailed specification can be found here:

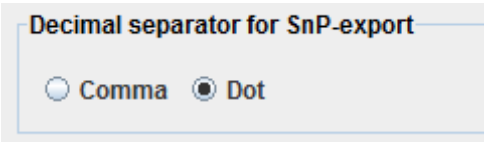
http://www.eda.org/pub/ibis/connector/touchstone_spec11.pdf

The parameters are defined for this model:



Currently the miniVNA is only capable of measuring the parameter S11 in reflection mode and S21 in transmission mode. The other parameters can only be measured, when manually reversing the DUT/DET connectors.

Remark: The decimal separator used in S-parameter export is NOT determined by the locale of the operating system but by two radio-buttons in the export settings dialog. See also chapter "Settings" on page 39.



S1P-parameter export

```
! created by Dietmar at Sun Jan 09 14:04:29 CET 2011
! generated using vna/J Version 2.6.13a
# Hz S DB R 50
000100000 -9.49989937 179.89638452
000281727 -9.53339600 -178.05930305
000463454 -9.51310366 -178.62377450
000645181 -9.50860638 -178.98732835
000826908 -9.51054483 -179.21463248
001008635 -9.51286286 -179.37451796
001190362 -9.49335249 179.61961335
001372089 -9.49579097 179.68376976
001553816 -9.49995498 179.69380940
001735543 -9.50188852 179.70142705
001917270 -9.50428947 179.69231205
002098997 -9.49179148 179.20646062
002280724 -9.49825286 179.22579596
```

In reflection mode a file with the extension S1P is generated with the following layout:

S2P-parameter export

In transmission mode a file with an S2P extension is generated, having this layout:

```
! created by Dietmar at Sat Jan 15 18:25:27 CET 2011
! generated using vna/J Version 2.6.14
# Hz S DB R 50
000100000 0,00000000 0,00000000 -80,23578137 57,12928109 0,00000000 0,00000000 0,00000000 0,00000000
000433166 0,00000000 0,00000000 -95,32855265 1,43052530 0,00000000 0,00000000 0,00000000 0,00000000
000766332 0,00000000 0,00000000 -94,86099094 35,38237030 0,00000000 0,00000000 0,00000000 0,00000000
001099498 0,00000000 0,00000000 -92,97648596 37,04807005 0,00000000 0,00000000 0,00000000 0,00000000
001432664 0,00000000 0,00000000 -89,57465163 41,86639735 0,00000000 0,00000000 0,00000000 0,00000000
001765830 0,00000000 0,00000000 -87,99524294 50,89351500 0,00000000 0,00000000 0,00000000 0,00000000
002098996 0,00000000 0,00000000 -87,16774724 56,23363292 0,00000000 0,00000000 0,00000000 0,00000000
002432162 0,00000000 0,00000000 -85,34411694 60,74176424 0,00000000 0,00000000 0,00000000 0,00000000
002765328 0,00000000 0,00000000 -84,43999756 62,55547269 0,00000000 0,00000000 0,00000000 0,00000000
003098494 0,00000000 0,00000000 -83,27488260 66,38424641 0,00000000 0,00000000 0,00000000 0,00000000
003431660 0,00000000 0,00000000 -82,38957639 68,21135108 0,00000000 0,00000000 0,00000000 0,00000000
003764826 0,00000000 0,00000000 -81,33380965 70,68546654 0,00000000 0,00000000 0,00000000 0,00000000
004097992 0,00000000 0,00000000 -81,00615524 71,73744515 0,00000000 0,00000000 0,00000000 0,00000000
004431158 0,00000000 0,00000000 -80,10638941 73,33220381 0,00000000 0,00000000 0,00000000 0,00000000
004764324 0,00000000 0,00000000 -79,50912750 75,37084967 0,00000000 0,00000000 0,00000000 0,00000000
005097490 0,00000000 0,00000000 -78,89885552 74,90592187 0,00000000 0,00000000 0,00000000 0,00000000
005430656 0,00000000 0,00000000 -78,21486462 75,70425552 0,00000000 0,00000000 0,00000000 0,00000000
005763822 0,00000000 0,00000000 -77,68663682 76,72801637 0,00000000 0,00000000 0,00000000 0,00000000
006096988 0,00000000 0,00000000 -77,04692131 76,86682799 0,00000000 0,00000000 0,00000000 0,00000000
006430154 0,00000000 0,00000000 -76,76901577 79,19230128 0,00000000 0,00000000 0,00000000 0,00000000
006763320 0,00000000 0,00000000 -76,50695369 78,63688039 0,00000000 0,00000000 0,00000000 0,00000000
007096486 0,00000000 0,00000000 -76,08058443 77,89209831 0,00000000 0,00000000 0,00000000 0,00000000
007429652 0,00000000 0,00000000 -75,48116332 79,30219448 0,00000000 0,00000000 0,00000000 0,00000000
007762818 0,00000000 0,00000000 -75,09469369 79,31937869 0,00000000 0,00000000 0,00000000 0,00000000
```

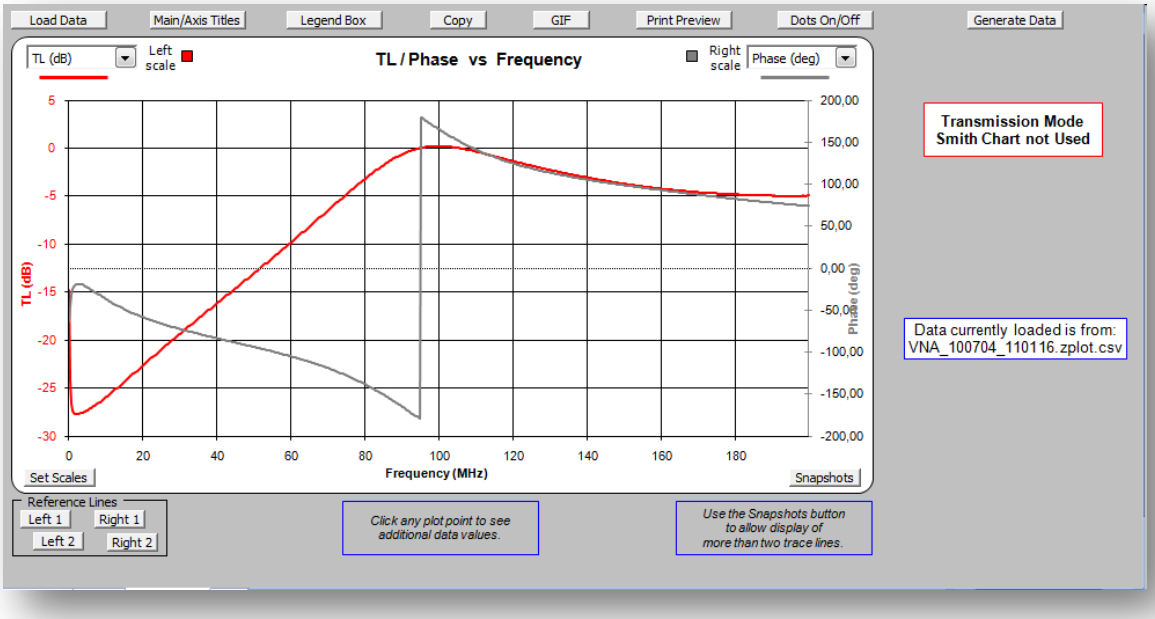
Only the parameter S21 is set in the generated file, all other parameters are set to dummy values, here 0.

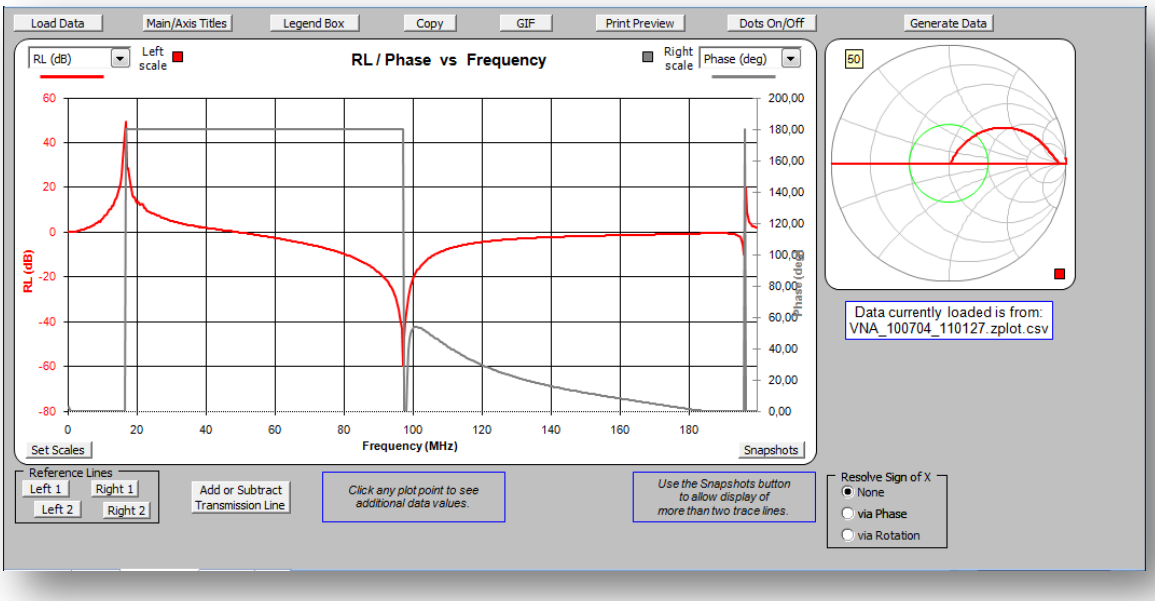
ZPlots export

This function exports the measurement data in a format, that can be read by the popular Zplots-EXCEL-Spreadsheet provided by Dan, AC6LA (http://www.ac6la.com/zplots.html).

The export filename also ends with **.csv**, so that Excel can load it without any renaming.

Importing the data into Zplots enables the user, to use the features of the Zplots-Spreadsheet even with newer MS-Office versions, where the serial port support currently no longer works.





S-Parameter collector

Introduction

The miniVNA as well as the miniVNA*pro* can only measure one S-parameter at a time. If you want to create a complete set of S-parameters for a two-port device, you have to execute four different scans with varying port connections. Problem is now, that you cannot combine the results of these four scans in one S-parameter file.

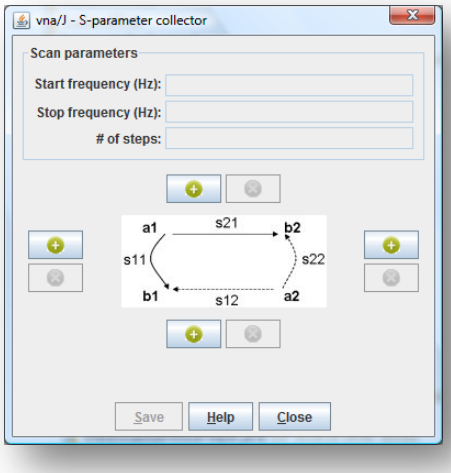
To support the user in creating files with more than one S-parameter, the S-parameter collector was introduced.

S-Parameter collector dialog

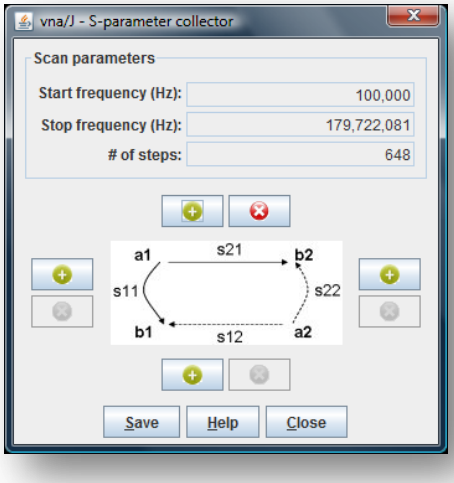
The S-parameter collector dialog can be found in the EXPORT-menu.

Selecting the menu entry open this dialog:

This dialog is a non-modal dialog, means you can continue working with vna/J as usual.



When you've executed a scan, you can put it into the collector by selecting one of the add-buttons  .

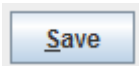


If this was the first scan, the scan parameters are listed in the fields and the corresponding delete-button  is enabled.

If you want to delete a specific parameter, simply click the corresponding delete-button. 

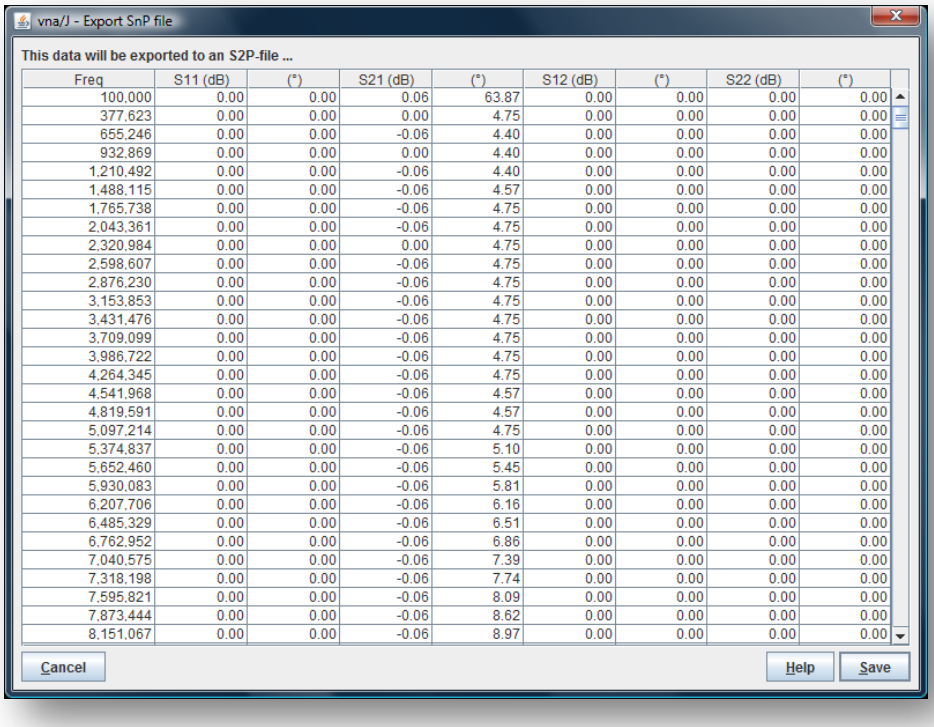
If you want to replace a specific parameter with a new scan, simply execute a new scan and re-click the corresponding add-button.

If you have finished your "collection" of S-parameters click the save-button. This opens the SnP Export file dialog. See next chapter for details

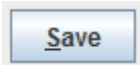


SnP Export Dialog

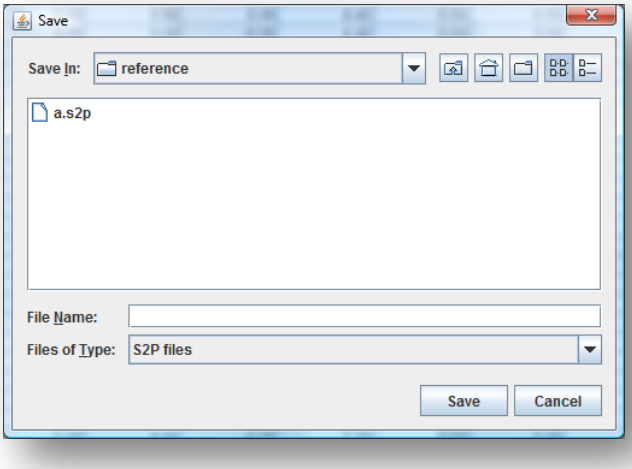
This dialog is shown, when the SAVE-button in the S-parameter collector dialog is pressed:



Freq	S11 (dB)	(°)	S21 (dB)	(°)	S12 (dB)	(°)	S22 (dB)	(°)
100.000	0.00	0.00	0.06	63.87	0.00	0.00	0.00	0.00
377.623	0.00	0.00	0.00	4.75	0.00	0.00	0.00	0.00
655.246	0.00	0.00	-0.06	4.40	0.00	0.00	0.00	0.00
932.869	0.00	0.00	0.00	4.40	0.00	0.00	0.00	0.00
1,210.492	0.00	0.00	-0.06	4.40	0.00	0.00	0.00	0.00
1,488.115	0.00	0.00	-0.06	4.57	0.00	0.00	0.00	0.00
1,765.738	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
2,043.361	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
2,320.984	0.00	0.00	0.00	4.75	0.00	0.00	0.00	0.00
2,598.607	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
2,876.230	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
3,153.853	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
3,431.476	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
3,709.099	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
3,986.722	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
4,264.345	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
4,541.968	0.00	0.00	-0.06	4.57	0.00	0.00	0.00	0.00
4,819.591	0.00	0.00	-0.06	4.57	0.00	0.00	0.00	0.00
5,097.214	0.00	0.00	-0.06	4.75	0.00	0.00	0.00	0.00
5,374.837	0.00	0.00	-0.06	5.10	0.00	0.00	0.00	0.00
5,652.460	0.00	0.00	-0.06	5.45	0.00	0.00	0.00	0.00
5,930.083	0.00	0.00	-0.06	5.81	0.00	0.00	0.00	0.00
6,207.706	0.00	0.00	-0.06	6.16	0.00	0.00	0.00	0.00
6,485.329	0.00	0.00	-0.06	6.51	0.00	0.00	0.00	0.00
6,762.952	0.00	0.00	-0.06	6.86	0.00	0.00	0.00	0.00
7,040.575	0.00	0.00	-0.06	7.39	0.00	0.00	0.00	0.00
7,318.198	0.00	0.00	-0.06	7.74	0.00	0.00	0.00	0.00
7,595.821	0.00	0.00	-0.06	8.09	0.00	0.00	0.00	0.00
7,873.444	0.00	0.00	-0.06	8.62	0.00	0.00	0.00	0.00
8,151.067	0.00	0.00	-0.06	8.97	0.00	0.00	0.00	0.00

In this dialog your collected scan data is displayed. If this data is matching your requirements, select the save-button 

to open a standard-save dialog.



Here you can assign a name to the S-parameter file. Again selecting the save-button 

in this dialogs, writes the S-parameter files into the selected location on your file-system.

You're then returned to the S-parameter collector dialog.

Tools

Currently four tools are available in addition to the network analyser functionality:

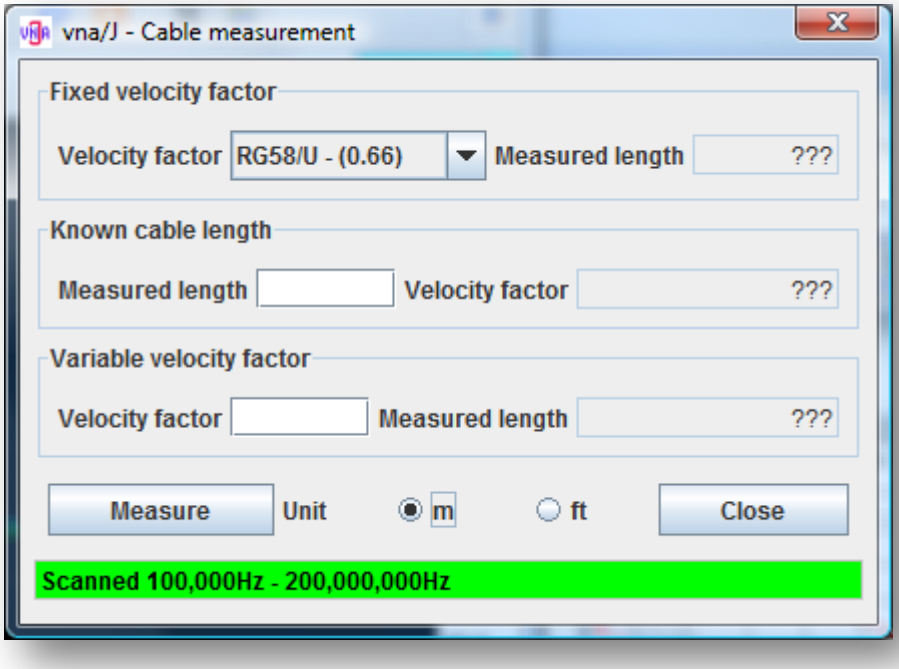
- Determine the length of a coaxial cable of a know type
- Use the miniVNA as a simple HF-signal generator
- Scheduler for measurements
- Display and compare previously saved data

These functions can be reached via the TOOLS menu or the corresponding toolbar buttons:

Cable length measurement

This tool enables the user

- to determine the length of a coaxial cable with known velocity factor
- to determine the velocity factor of a cable with known length



Pressing the MEASURE button starts a full scale scan of the attached analyser in reflection mode.

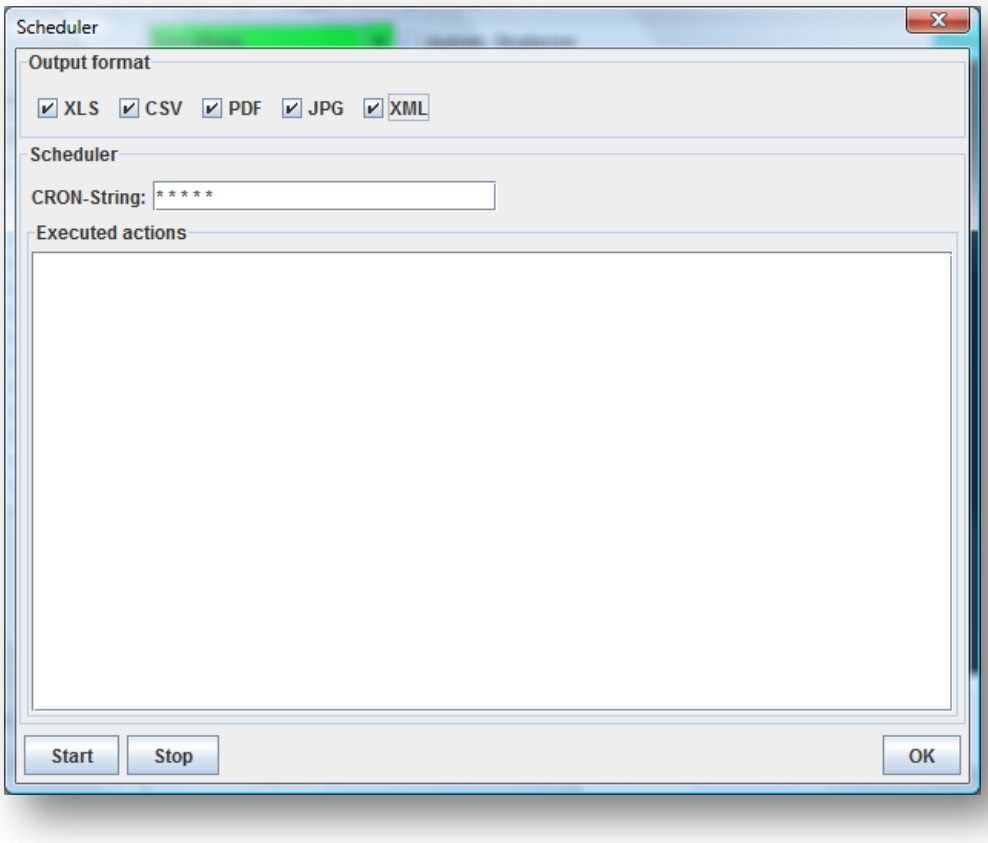
Depending on which values are filled in by the user, the results are calculated:

The length unit can be selected using the radio buttons for **m** and **ft**.

Generator

Please consult the various driver guide for explanations regarding the generator dialog.

Scheduler



General

The scheduler enables the user, to create analyzer scans on a regular basis. Therefore the user has to define in which time periods a scan should be done. For details see chapter "Time definition" on page 59.

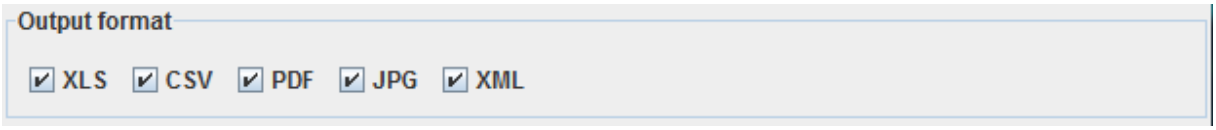
To give reasonable filenames, the user should define a filename pattern in the export settings like this:

```
VNA_{0,date,yyMMdd}_{0,time,HHmmss}
```

More details on filename pattern see chapter "Filename" on page 40.

The scheduler is very similar to the popular LINUX CRON daemon, so for detailed information consult the LINUX documentation.

Output format



The same export formats which are available through the toolbar are also available for scheduled output generation .

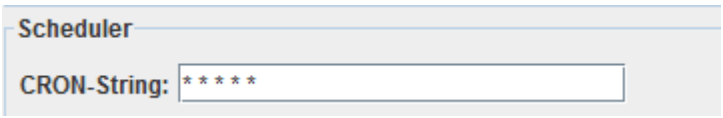
For each selected output format, a separate file is created as defined in the export settings.

Selecting all checkboxes and specifying a filename patter as described on the previous page gives these filenames:

Feb 28, 2010 11:21:01 AM c:\temp\VNA_100228_112101.xls
Feb 28, 2010 11:21:01 AM c:\temp\VNA_100228_112100.pdf
Feb 28, 2010 11:21:00 AM c:\temp\VNA_100228_112100.csv
Feb 28, 2010 11:21:00 AM c:\temp\VNA_100228_112100.jpg
Feb 28, 2010 11:21:00 AM c:\temp\VNA_100228_112100.xml

Time definition

The time definition must be entered in the field name **CRON-String** here:



The time definition consists always of five separate patterns:

Order	Pattern name	Comment	Range
1	Minute pattern	During which minutes of the hour should the task been launched?	0 .. 59
2	Hours pattern	During which hours of the day should the task been launched?	0 .. 23
3	Days of month pattern	During which days of the month should the task been launched?	1 .. 31 L specifies the last day of the month
4	Month pattern	During which months of the year should the task been launched?	1 ..12
5	Days-of-week pattern	During which days of the week should the task been launched?	0 == Sunday .. 6==Saturday

The universal quantifier ***** can be used, to indicate

- every minute
- every hour
- every day
- every month
- every weekday

A list of discrete values can be specified using a comma as separator. I.e. "* 0,12 * * *" means execute the task at noon and midnight.

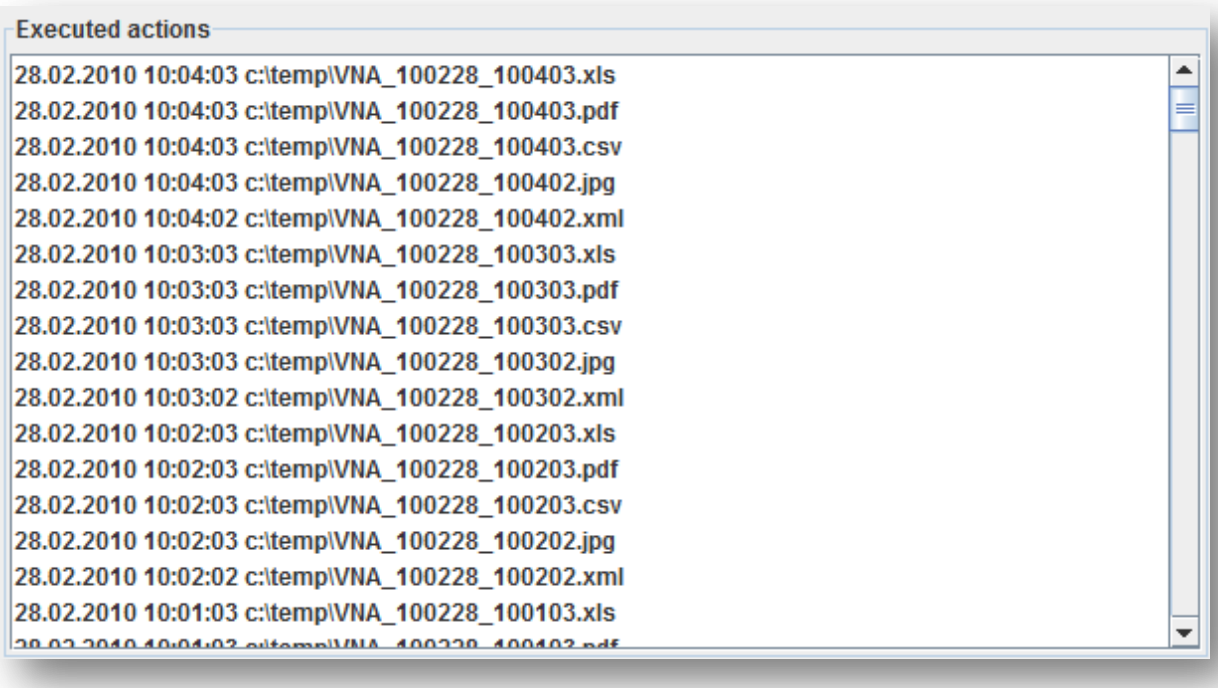
A range of values can be specified using a hyphen as separator. I.e. "0-4 * * * *" means execute the task every minute in the first five minutes of every hour.

A repetitive schedule can by done by using the slash syntax. I.e. */5 * * * * means execute the task every five minutes starting from now.

For more details see http://en.wikipedia.org/wiki/Cron

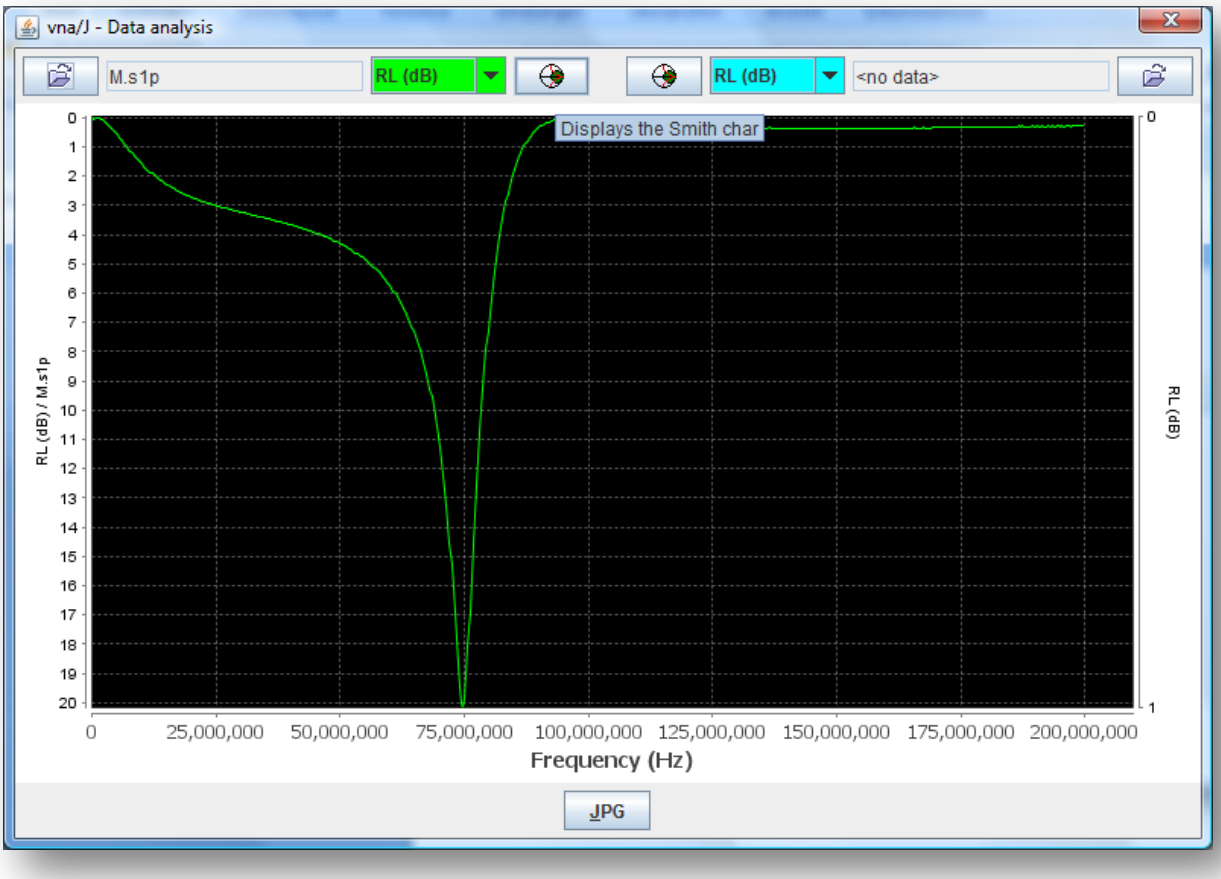
Execution log

Every action that was executed by the scheduler, is reported in the list box:



Data analysis

Previously saved data can be later displayed again, using the Data analysis dialog:



Here the user can load up to two previously recorded datasets. The available operations for the data-sets are:

Opens the default OPEN-dialog, where the user can select a previously recorded data set.
The name of the loaded data file is then displayed near the open icon.

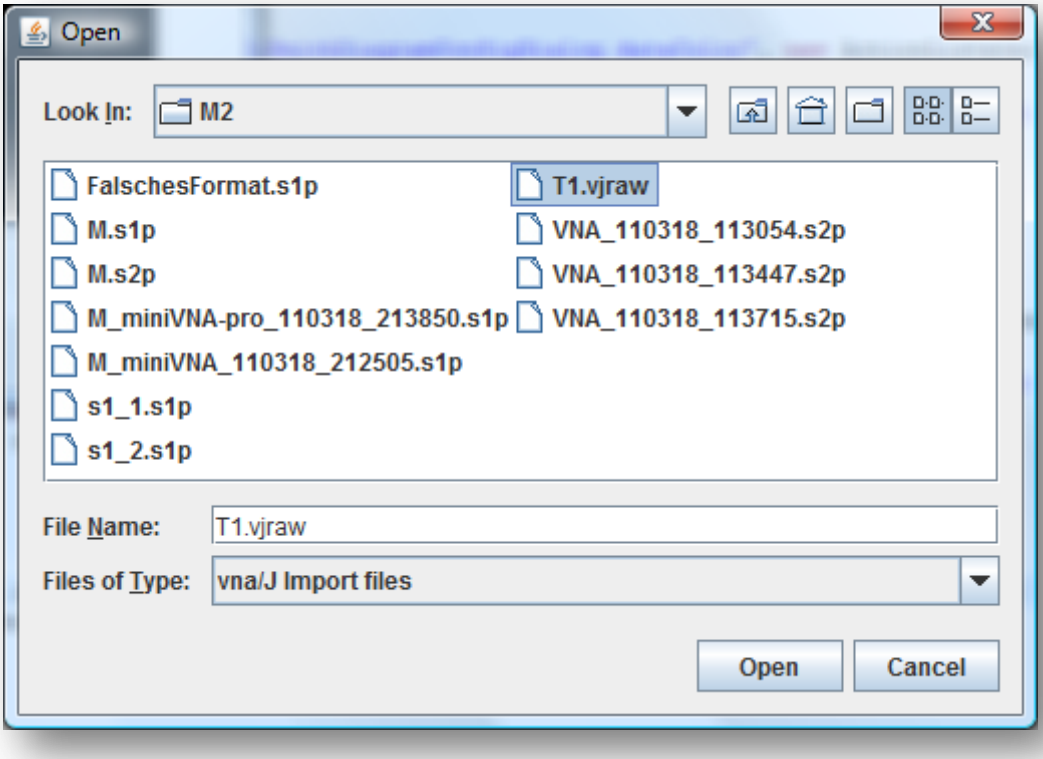
Here the same scales are available as in the main diagram area.

The data-set is displayed inside a Smith-chart in a separate dialog window.
See details in chapter "Display Smith-chart" on page 18.

Export the displayed diagram to a JPEG file.
The size of the exported JPG is set fixed to 1000x800 pixels.

Loading data

Selecting one of the two open buttons, shows a general file open dialog where the available files are displayed:



Currently RAW files (*.vjraw) from vna/J and S-parameter files are supported.

VJRAW format

Raw files contain all the informations which where available at the point in time of measurement. See chapter "Saving measured data" on page 17. After selecting a RAW-file for loading the data is displayed after loading.

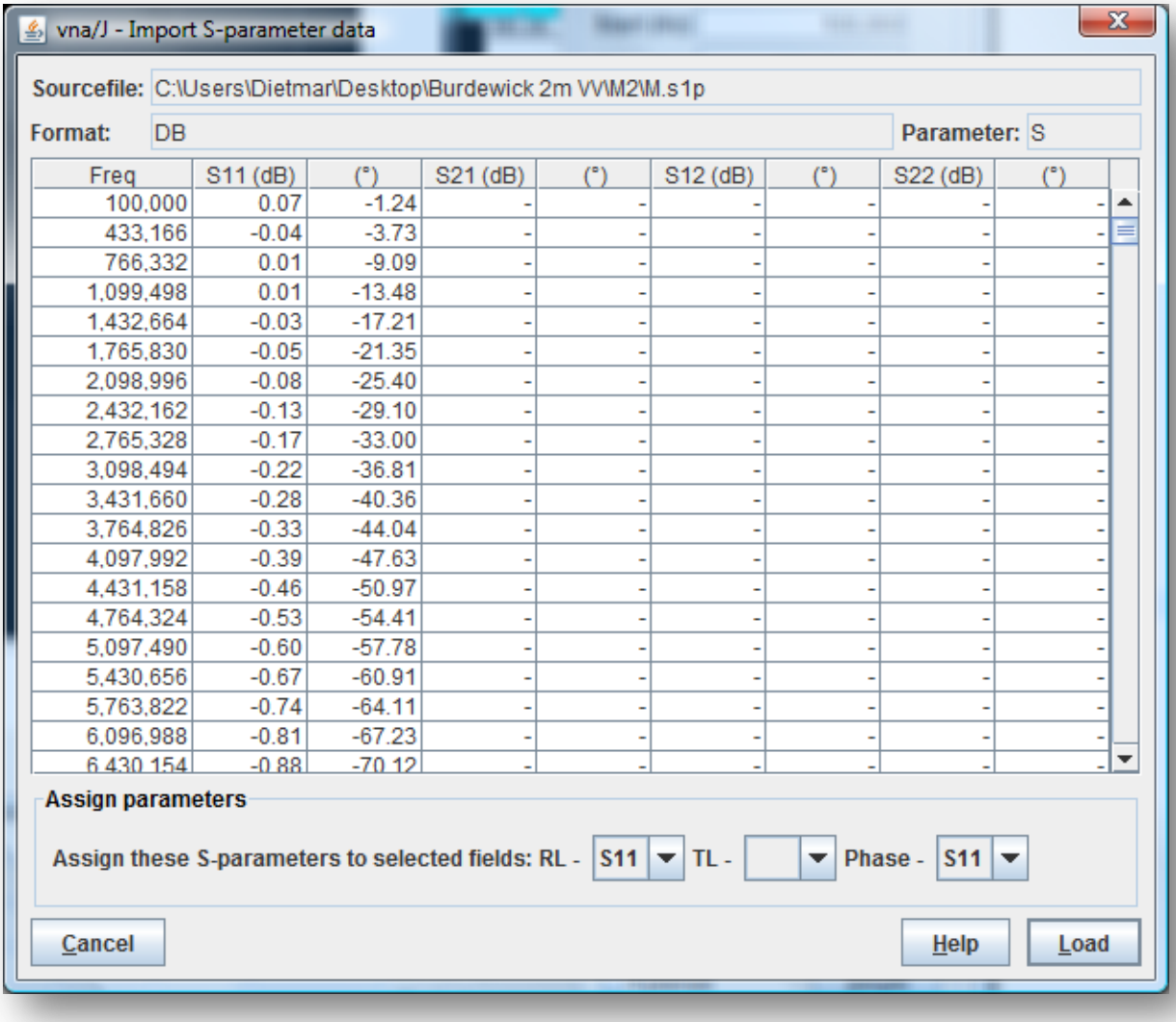
S-parameters

The application supports only properly formatted S-paramater files (see http://www.eda.org/pub/ibis/connector/touchstone_spec11.pdf for details).

Only a subset of this format is supported:

Parameter	S
Format	DB

If the selected files contains valid data, the contained data is displayed:



Here you have to choose, which data from the input file should be mapped to which data parameter inside vna/J.

For this, three dropdown boxes in the "Assign parameters" group are available, where the user can choose which S-parameter is assigned to which parameter in vna/J.

For a S-parameter file with

only S11 set	loss part is assigned to RL and the phase part to PHASE
only S21 set	loss part is assigned to TL and the phase part to PHASE
S11 and S21 set	loss part of S11 is assigned to RL and the phase part of S11 to PHASE. The loss part of S21 is assigned to TL

All assignments can be changed by the user.

After clicking the "LOAD" button, the data is loaded from the file, and the dependent parameters

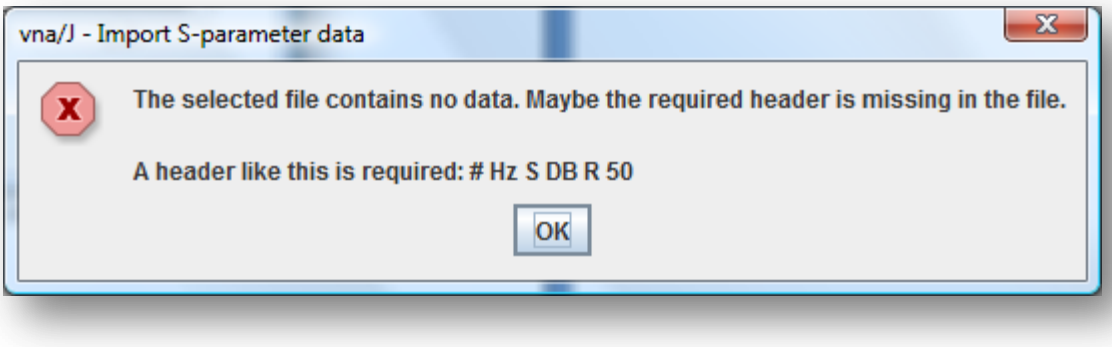
- Rs
- Xs
- |Z|
- SWR

are calculated.

***Note**:* *For analyser, which do not provide a correct phase sign (like the miniVNA or the MAX6) , the calculation of Rs maybe incorrect.*
This may also result in weird curves on the Smith-chart.
This will be fixed in a later version of vna/J.

Error in file format

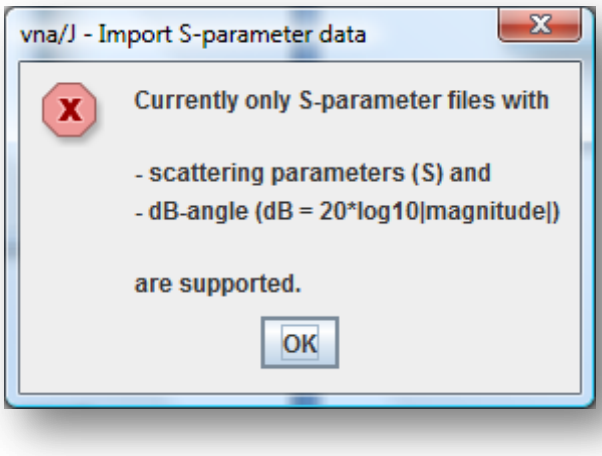
When loading a file without data or without a valid header, this message is displayed:



Please check the file with a standard text editor whether it contains a valid header and any data.

Invalid file content

If the file does not contain the proper S-format data, this message is displayed:



Please try to provide an S-parameter file with different format and parameters.

Multi-tune

The idea of this "multi-tune" dialog is, to support the tuning of multiband antennas or multiband filters inside receivers etc.

The user can create one or more small scan windows with different frequency ranges to cover the necessary spectrum.

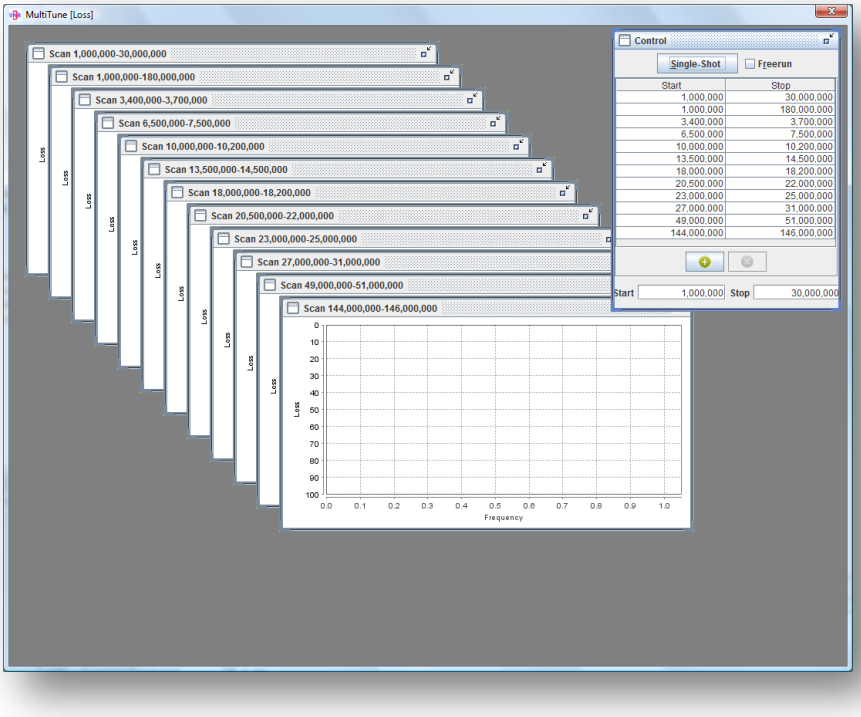
The window can be opened by selecting the menu bar entry TOOLS-MULTI TUNE or the corresponding toolbar button  .

The mode (transmission or reflection) is determined by the selected mode in the main window.

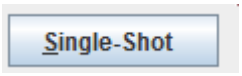
The type of scale displayed is also determined by the scale selected in in the left-scale of the main window.

The window is modal to the main window and must be closed selecting the close-icon  in the upper-right corner.

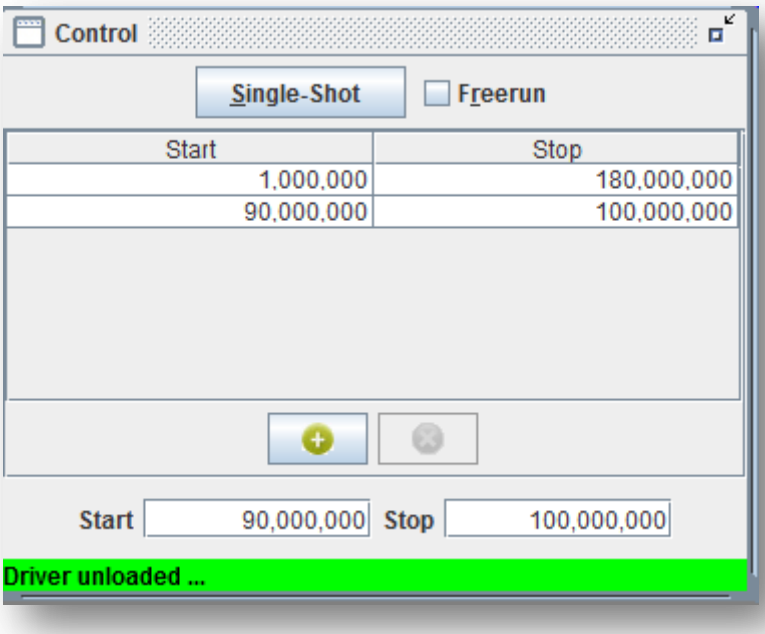
On the very first start of the multi-tune window, the frequency list is populated with the same defaults as the frequency list in the main window:

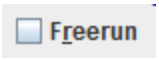


Control window

The window labeled "control" contains a list of scan-ranges that are executed whenever the button 

is pressed.:



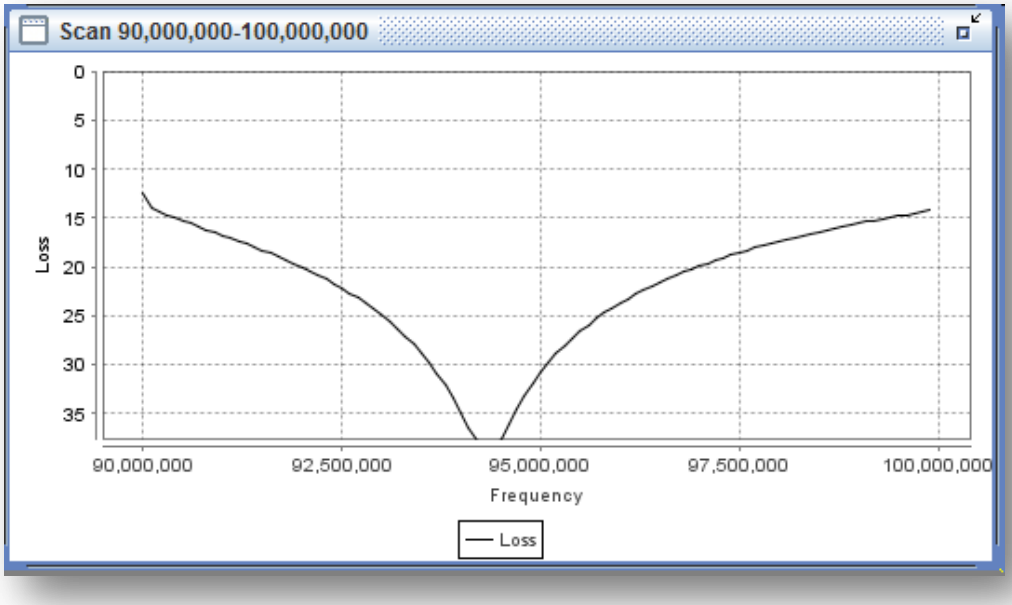
Selecting the checkbox 

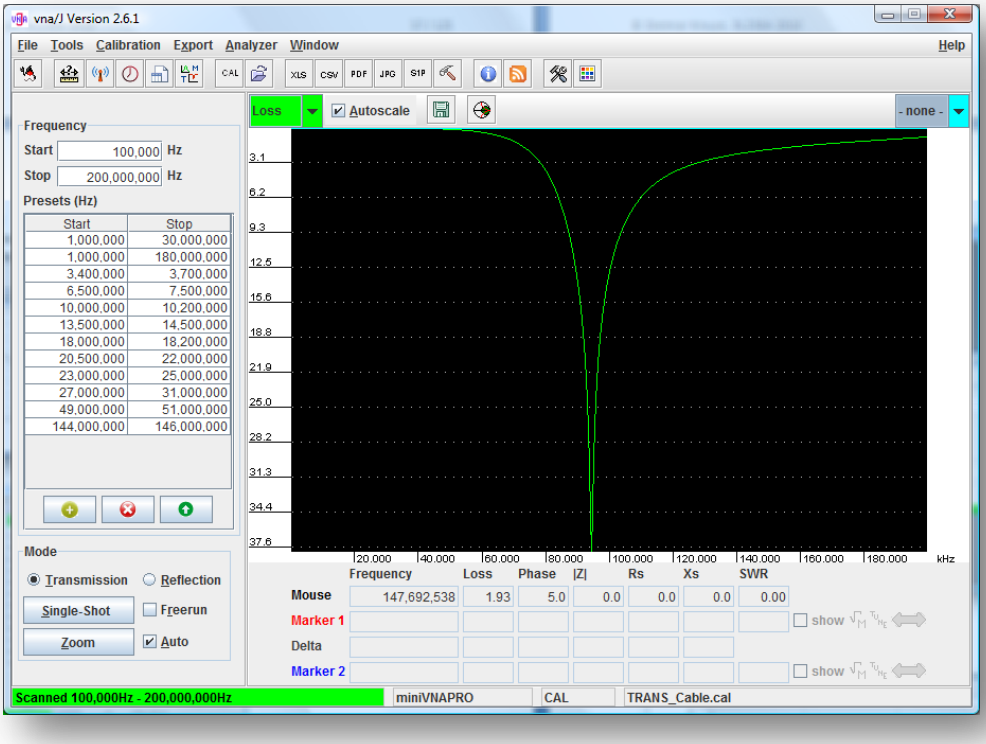
enables a free-running mode, same way as it is handled in the main window.

A new entry can be added to the list by entering the start and stop frequency in the entry fields and pressing the  button. An existing can be deleted by selecting the entry in the list and pressing the  button.

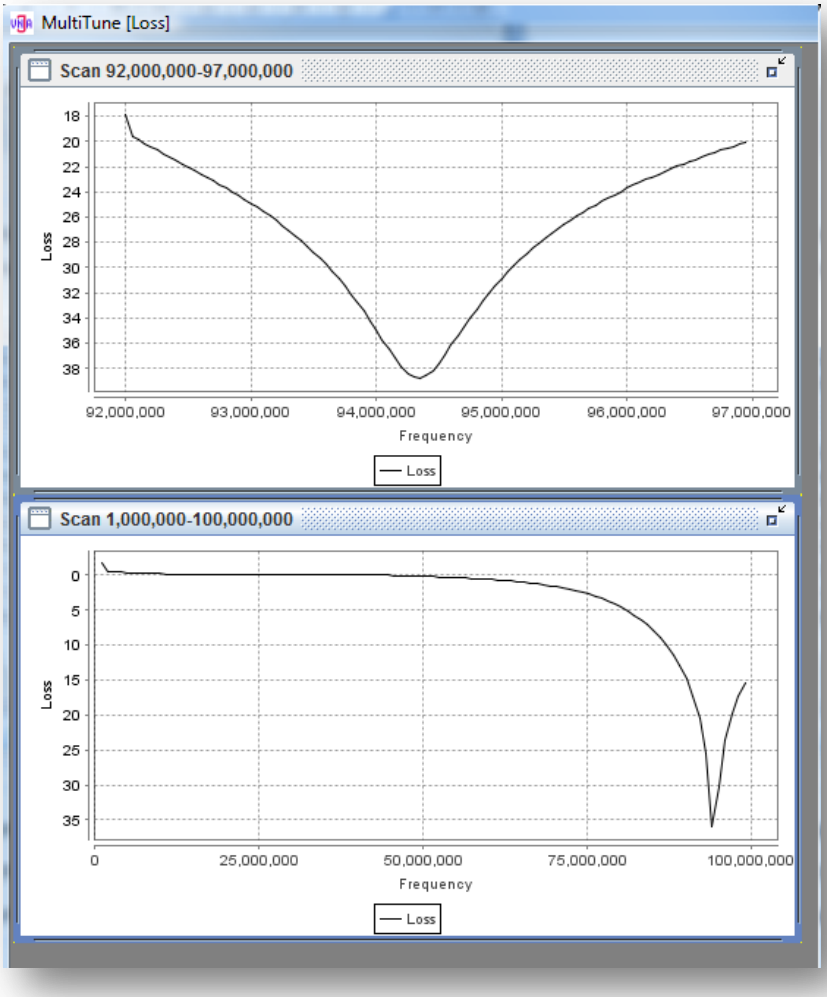
Scan-window

Each scan window contains the data for the given scan range. The measurement parameter (Loss, Phase, SWR, Xs, Rs, |Z|) is determined by the selected type of the left scale in the main window:





Each of the windows have personal-scaling settings:



The diagrams support a number of operations like scaling, printing or exporting the data.

Simply click on the diagram area with the right-mouse button and selected the desired option.

Each diagram has its own options. These options are NOT retained when closing and reopening this window!

Measurement basics

The measurement process inside this application is a multi step one:

1. Connect known loads (OPEN, SHORT and LOAD) to the VNA ports
2. Read raw data from the VNA for the various loads
3. Calculate the main calibration data from the raw data
4. Optional save them for later use
5. Calculate a temporary calibration dataset for usage in this configuration (frequency and #samples)
6. Connect the load to measure to the VNA ports
7. Acquire the raw data from the VNA
8. Use the previously calculated temporary calibration data to calculate exact measurement data

Calibration

To get maximum precision, the calibration data should match the current measurement parameters, means:

- Analyser type (currently only miniVNA and the sample driver)
- Start frequency
- Stop frequency
- Mode (transmission or reflection)
- Number of measurement steps

If the frequency range is changed, a new calibration set should be created for the new range. The number of calibration steps is directly controlled by the horizontal size of diagram window.

This implementation has the big drawback, in that whenever you zoom into a diagram, a new set of calibration data must be used.

To overcome this limitation, in the current implementation a **main calibration dataset** with 2.000 points is recorded and stored.

To correct a recorded set of raw data, a **temporary calibration dataset** is created from the **main calibration dataset** and used to transform the raw data.

Depending of the analyser type and mode, a number of calibration data sets is needed:

Analyzer	Mode	OPEN	SHORT	LOAD	Loop
miniVNA	Transmission	-	-	-	✓
	Reflection	✓	-	-	-
miniVNApro	Transmission	✓	-	-	✓
	Reflection	✓	✓	✓	-
Sample	Test	✓	✓	✓	✓

Storage

Location

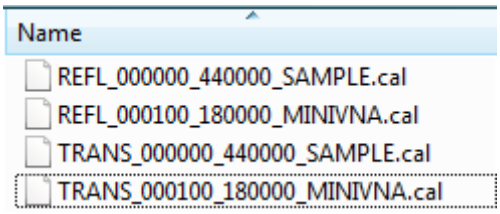
The **main calibration dataset** can be stored (see "Saving calibration data" on page 77) and retrieved from you local disk (see "Loading existing calibration data" on page 78).

The calibration files are stored in the following location on your local hard disk:

Platform	Location
Windows XP	C:\Einstellungen und Dokumente\<UserName>\vnaJ.2.7\calibration C:\documents and settings\<UserName>\vnaJ.2.7\calibration
Windows VISTA	C:\Benutzer\<UserName>\vnaJ.2.7\calibration C:\users\<UserName>\vnaJ.2.7\calibration
Windows7	??? /vnaJ.2.7/calibration
Mac OSX	??? /vnaJ.2.7/calibration
SUSE Linux 11	??? /vnaJ.2.7/calibration

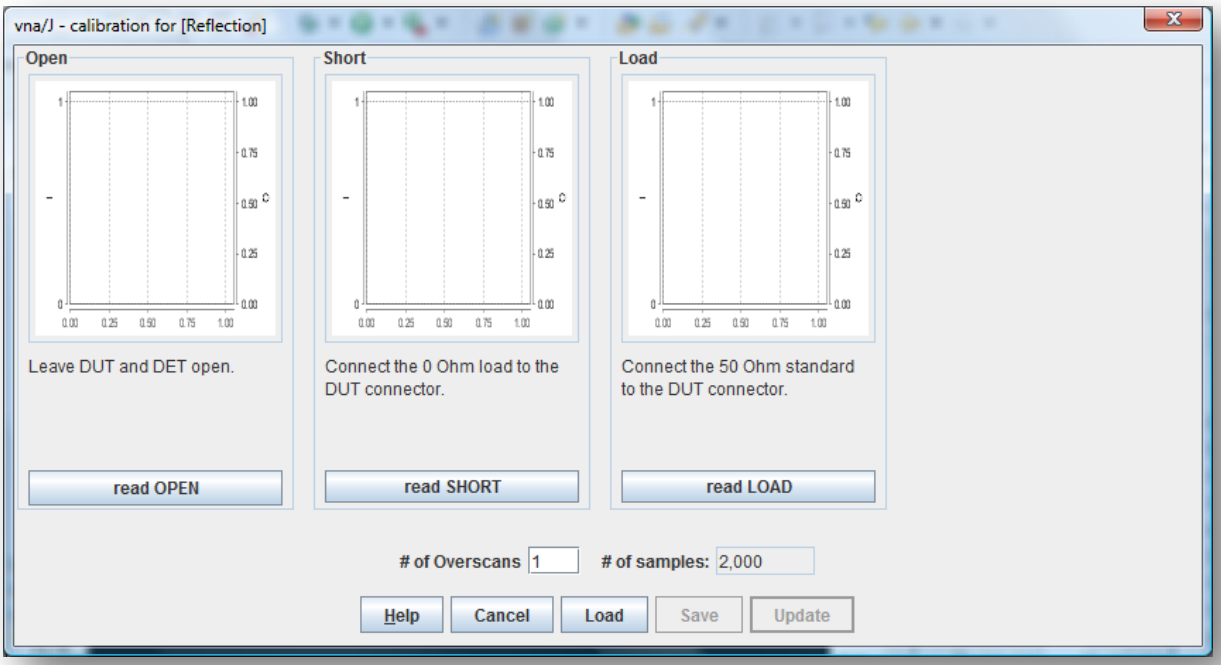
Format

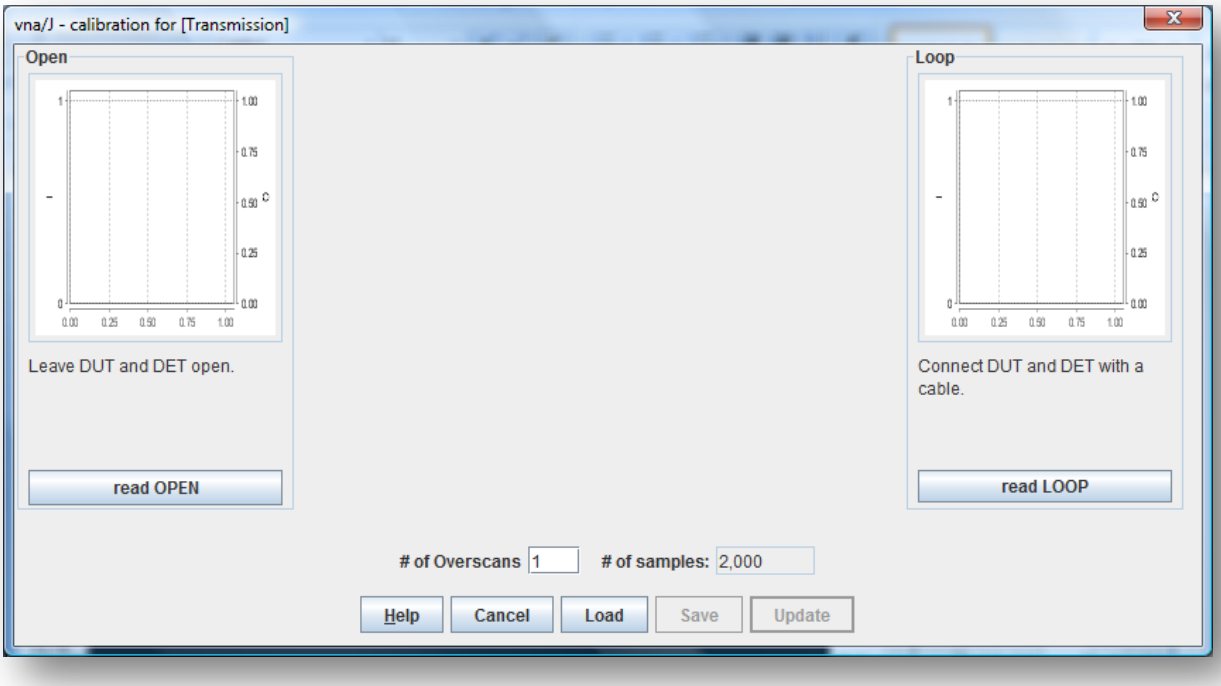
The calibration files are stored binary on the filesystem with the extension **.cal**.



Procedure

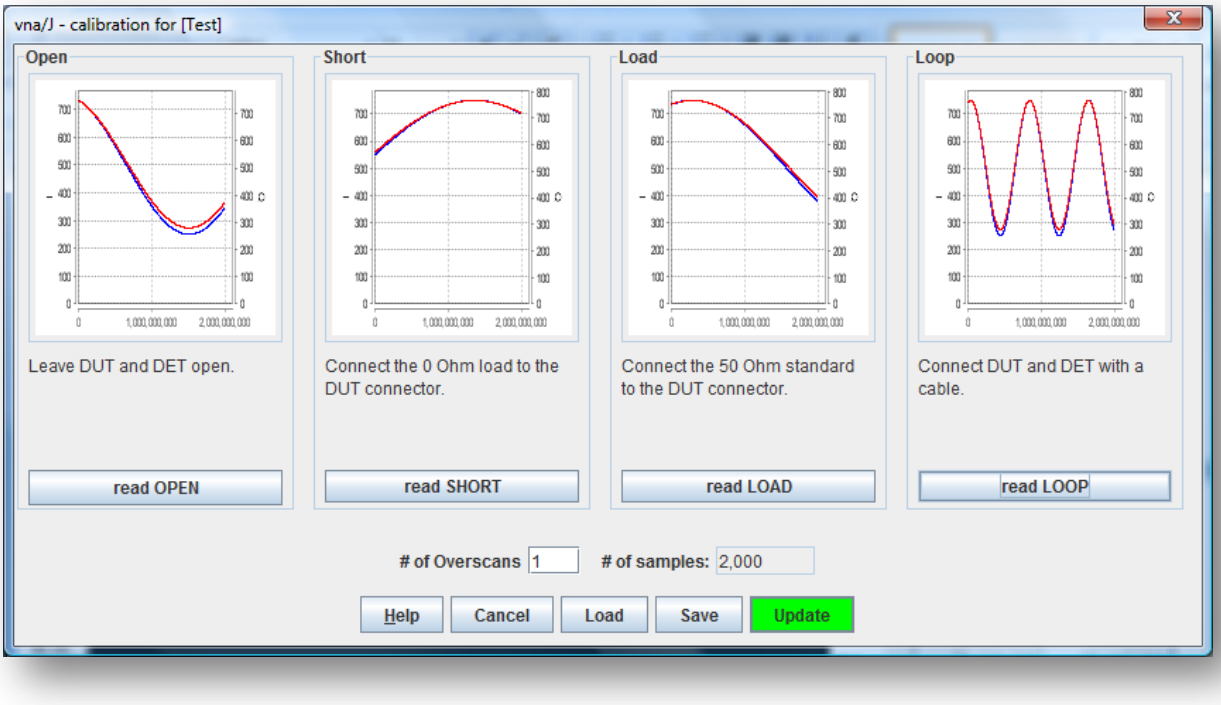
The calibration dialog is opened by selecting the menu CALIBRATION/LOSS or the corresponding button in the toolbar. In the title bar of the calibration dialog, the currently selected mode is always displayed.





There are four diagram areas on this dialog. Depending of the selected mode and analyser type, one or more diagram areas are visible.

For every visible diagram, a measurement must be made to create a valid main calibration dataset. When all the required calibration data has been created, the SAVE button gets enabled and the UPATE button receives a green background to indicate, that a complete main calibration dataset is now recorded.



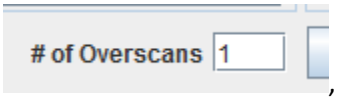
The created main calibration dataset can now be used in the application by simply pressing the UP-DATE button, which will also close the dialog..

If one or more curves do not match the expectations simply rerun the needed calibration by pressing the button below the diagram again.

When closing the dialog using the UPDATE button, the calibration status in the status bar is updated.

Over scan

To get smoother scans when the measured object s resistance is near one of the calibration references (means i.e. the measured resistance is 50Ohm real which is identical with the reference value 50Ohm) an over scan feature was added.

In the calibration dialog exists an input field 

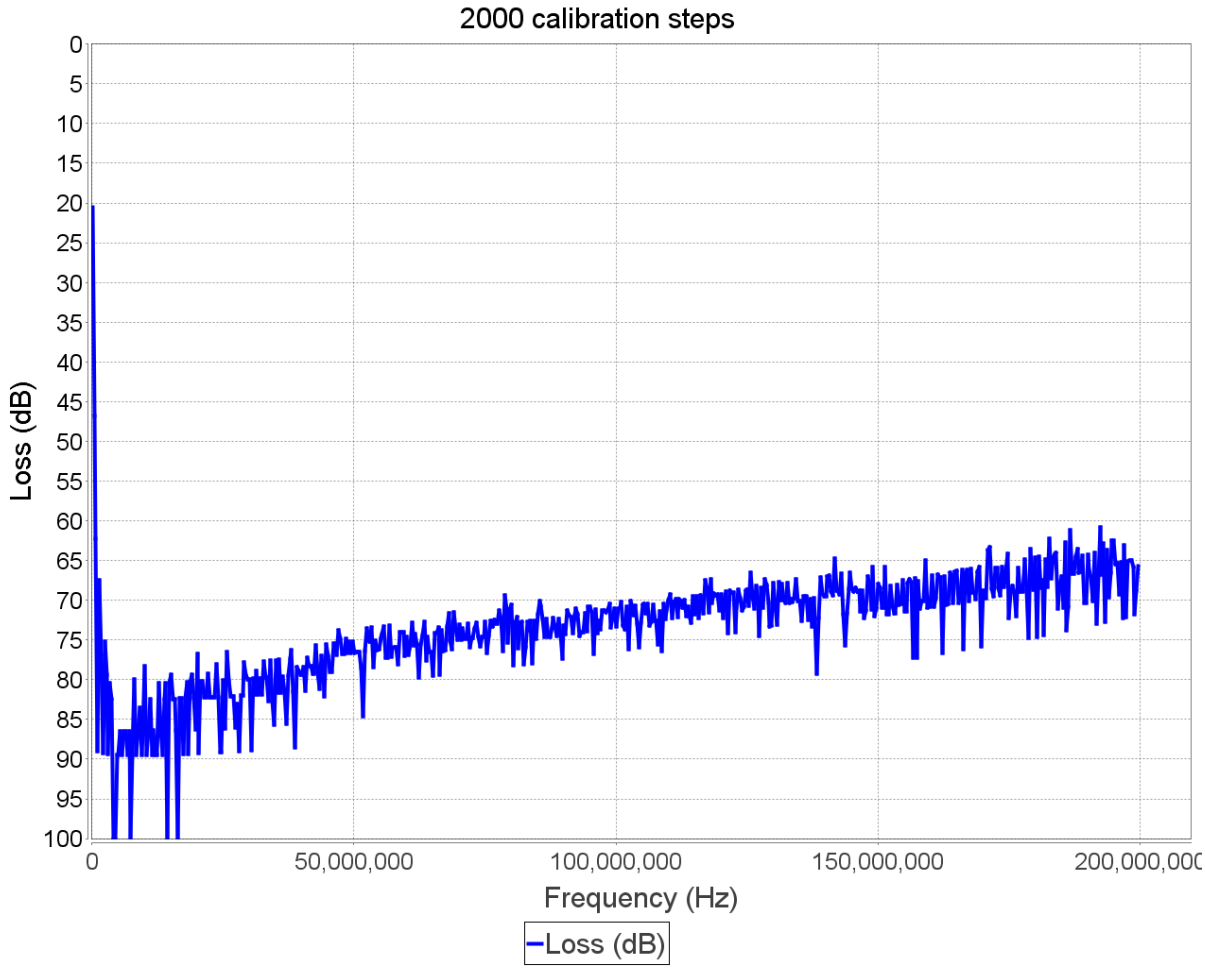
, where the number of scans can be entered. This number of scans is executed when the readXXX button is pressed. The calibration curve used is the arithmetic mean of all scans executed. The higher the number, the smoother the calibration data is.

Remark: *The time needed to create a i.e. 5x over scan is about 5 times the duration needed for a 1x over scan.*

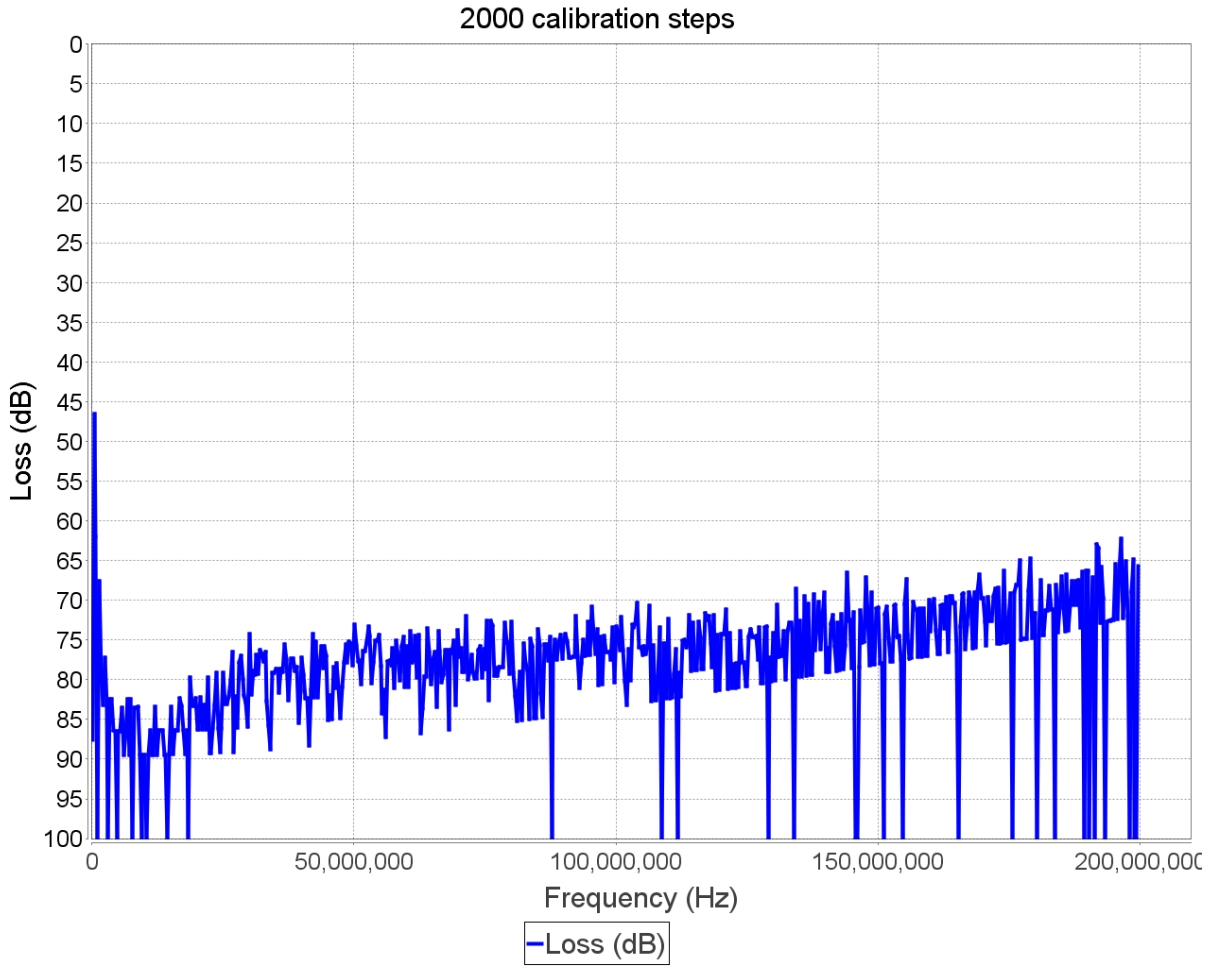
The resulting calibration data file contains no information how many over scans where used during creation

The results are explained here with a 50Ohm resistor connected to DUT in reflection mode.

2.000 calibrations points and 5x over scan

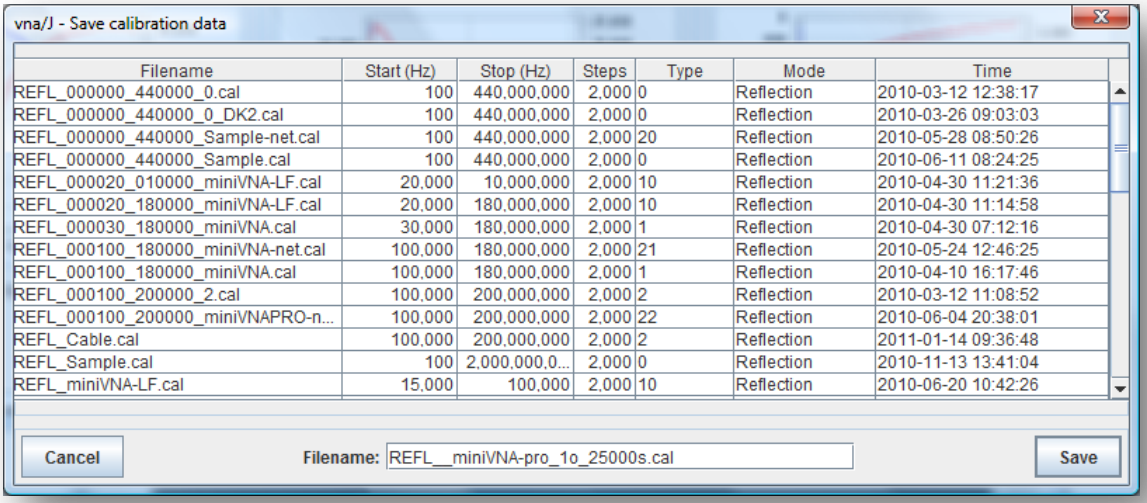


2.000 calibration points and 1x over scan



Saving calibration data

After creating a complete calibration data set in the calibration dialog, it is possible to save this calibration data set for later use by pressing the SAVE button. This opens this dialog:



In the upper list, all existing calibration files are listed for information.

The filename of the new calibration files is preset. This filename is constructed following this pattern:

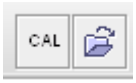
```
<Mode>_<Analysertype>_<#Over>o_<#Sam>s.cal
```

Mode	REFL | TRANS
Analyzertype	miniVNA |miniVNA-pro | …
#Over	number of over samples
#Num	number of calibration samples

The name can be overwritten by the user.

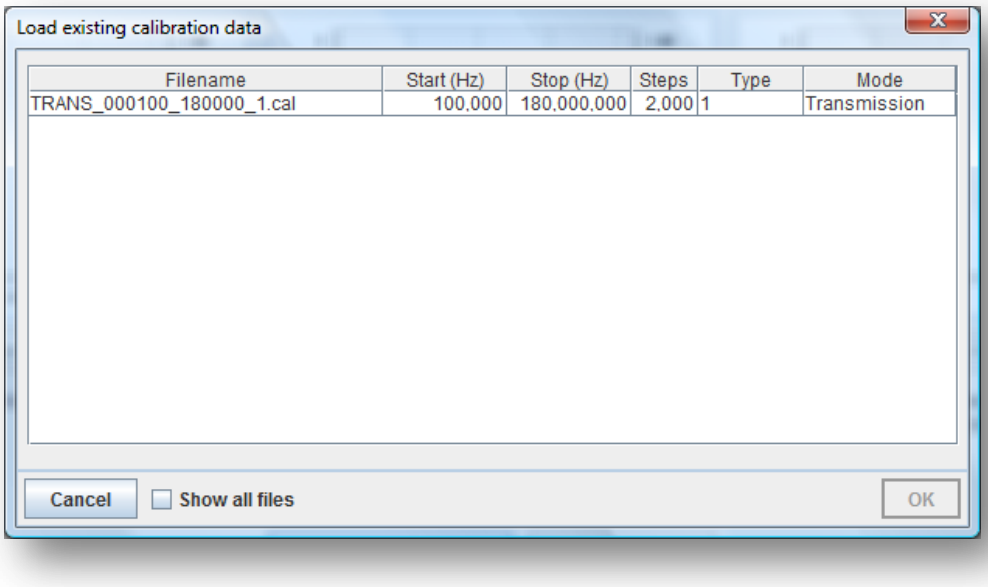
***Note**:* *When an already existing file is selected, a warning is shown and when confirming it, the existing file is overwritten.*

Loading existing calibration data

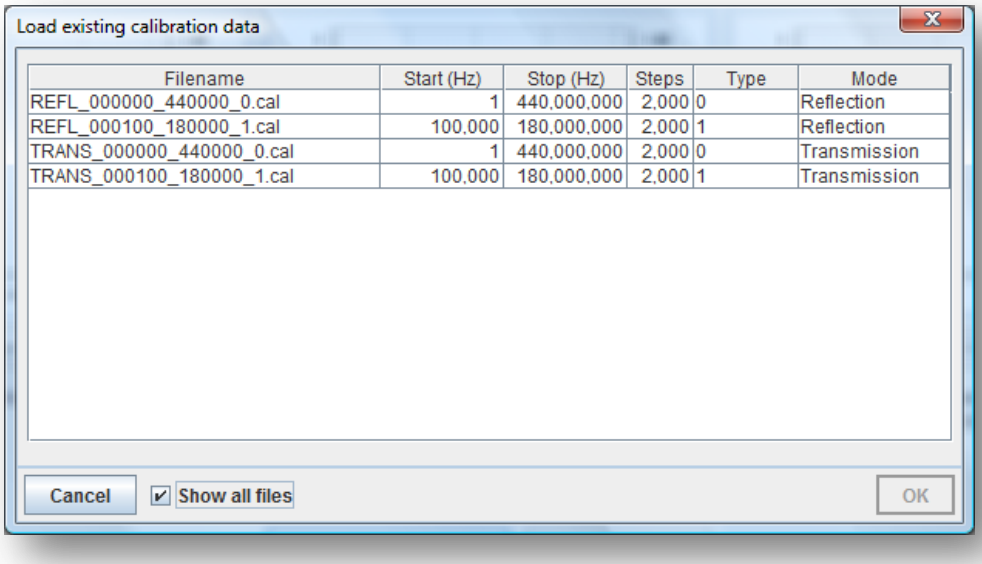
Existing calibration data files can be loaded via the OPEN icon 

in the toolbar or inside the calibration dialog, it is also possible to load a previously saved calibration data file.

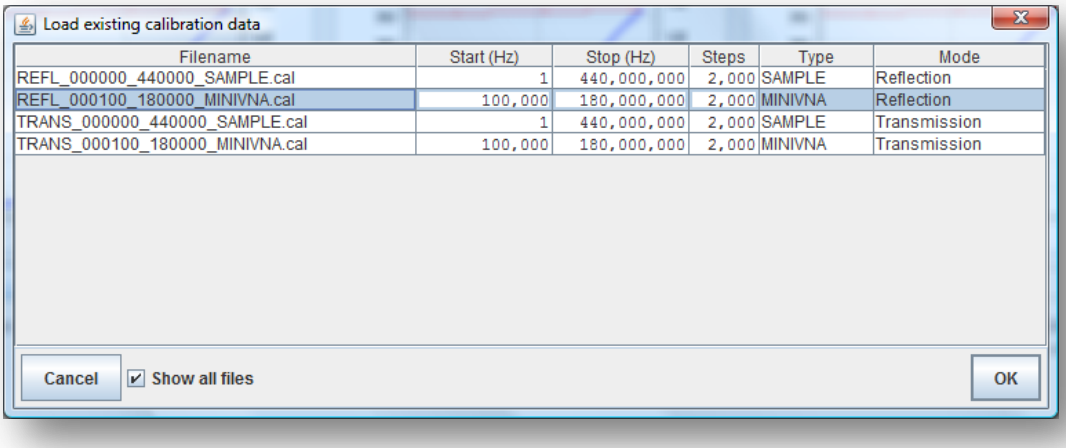
When pressing the LOAD button inside the calibration dialog, a special selection dialog opens, which shows detailed information on matching calibration files in the preferred directory.



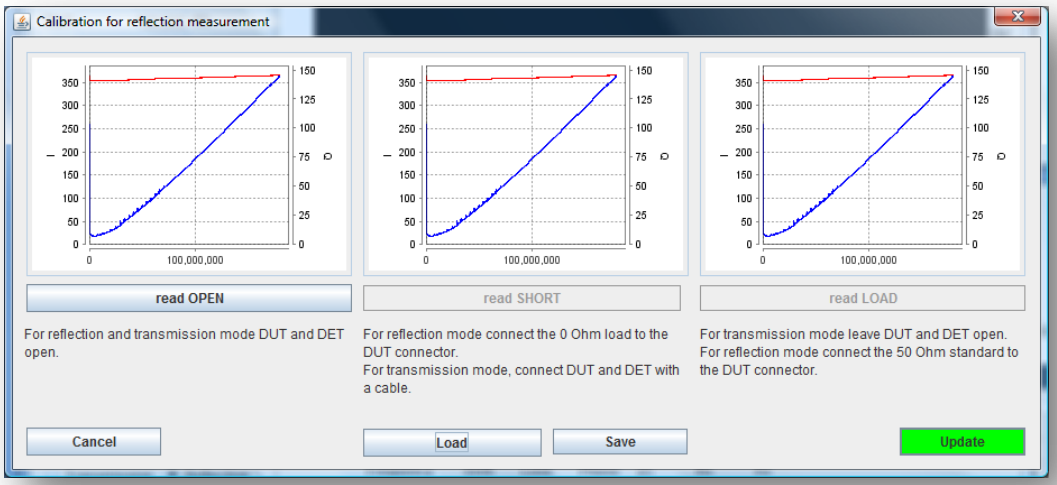
When selecting the SHOW ALL FILES checkbox, all calibration files in the preferred directory are displayed:



When the selected entry matches the current configuration (mode, frequency range, analyser type) the OK button is enabled.



Pressing the OK button loads the selected calibration data into the calibration dialog:



The calibration points are recalculated based on the current formulas implemented in the application to ensure also correct loading after update to internal mathematics…

Note: *The type columns displays the internal number of the selected driver and is just for information purposes.*

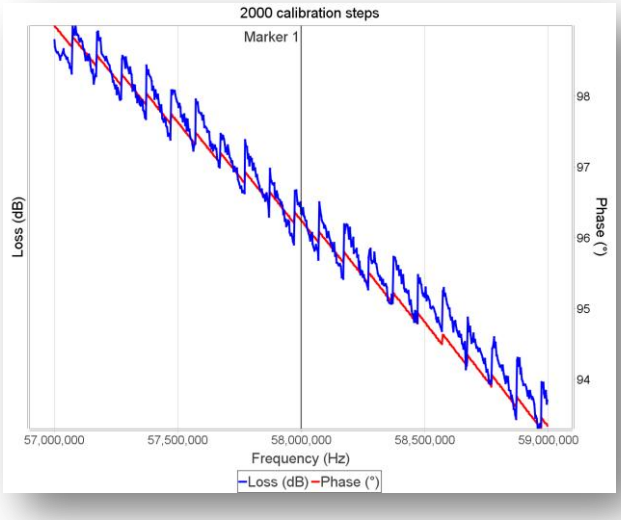
It is only possible to load calibration data sets, that exactly match the selected hardware in the aspects of analyzer-type, frequency-range, reflection or transmission mode and number of calibration steps.

Scan quality

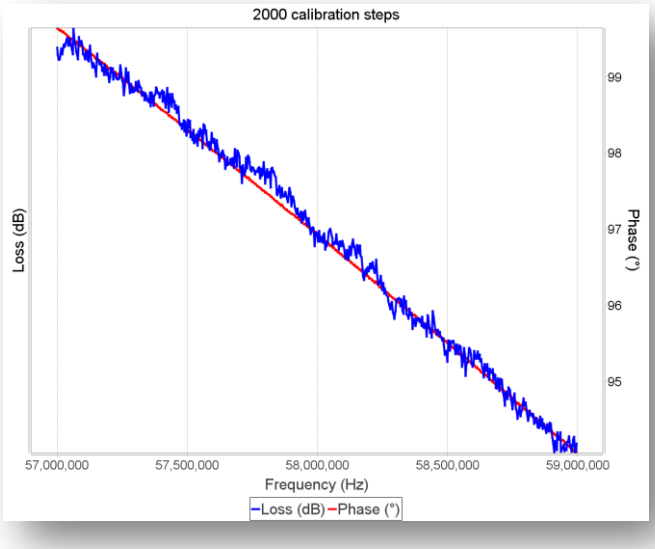
The number of calibration steps has a direct impact on the quality of small scan-ranges.

Lets take the default number of 2.000 steps. This gives a frequency span of about 100kHz per calibration step for a analyzer frequency span from 1-200MHz.

So when we execute a scan from i.e. 57 MHz to 59 MHz this range is covered by 20 calibration points.



If the number of calibration steps is increased to 20.000 steps. This gives a frequency span of about 10kHz per calibration step. Now the same range is covered by 200 calibrations points This results in a far more smooth measurement curve.



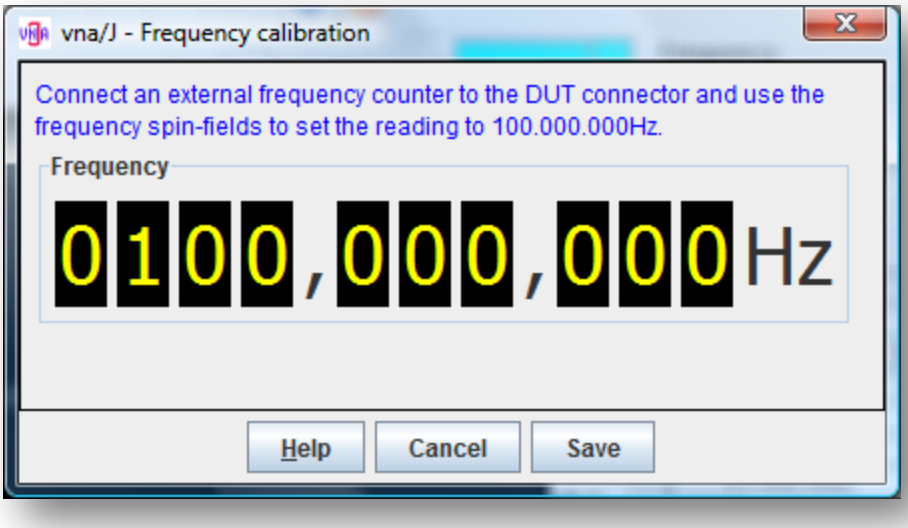
***Note**: For some drivers, the number of calibration steps can be set in the driver info dialog. Please consult the various driver guides for details.*

Frequency calibration

The calibration can be done easily using a frequency counter connected to the DUT port.

Execute the following steps:

1. Open the frequency calibration dialog (menu CALIBRATION/FREQUENCY)



2. Connect a frequency counter to the DUT connector of the analyser.
3. Fine tune the frequency with the frequency digits, until 100.000.000 Hz are displayed on the frequency counter
4. Close the dialog with the SAVE button.

***Remark**:* *The calibration value is stored for the selected analyser type. This can be checked also in the driver information dialog.*

When closing the application, the correction value is saved to the file system and will be reloaded whenever this driver is loaded.

General information

The frequency calibration values (DDS ticks per MHz) can be calculated using this formula:

DDS-range	$Ticks_{max}$= 4294967296
DDS-Clockrate	f_{dds}
DDS-Ticks per MHz	$Ticks_{MHz}=Ticks_{max} / f_{dds}$
Testfrequency	f_{test} = 100 MHz
Frequency value	$Ticks_{test} = Ticks_{MHz} * f_{test}$

This gives as starting values:

Analyzer	F_{dds}	$Ticks_{MHz}$	f_{test}	$Ticks_{test}$
miniVNA	400MHz	10737418	100MHz	1073741800
miniVNApro	500MHz	8589934	100MHz	858993400
	520MHz	8259552	100MHz	825955200

Configuration

All configuration data is stored in a user specific folder on the file system. No entries are made to the system registry or any other system configuration files.

All configuration and calibration files can be found here:

Platform	Location
Windows XP	C:\Einstellungen und Dokumente\<UserName>\ vnaJ.2.7 C:\documents and settings\<UserName>\ vnaJ.2.7
Windows VISTA	C:\Benutzer\<UserName>\ vnaJ.2.7 C:\users\<UserName>\ vnaJ.2.7
Windows7	??? \ vnaJ.2.7
Mac OSX	??? / vnaJ.2.7
SUSE Linux 11	/home/user/<UserName> / vnaJ.2.7

Remark: If you want to delete everything, simply delete the vnaJ directory, the used JAR-file and everything is gone.

Storage location

The settings for the vna/J application are stored inside an XML-file named **vna.settings.xml**.

This file is created after first application start and successful termination and contains a set of valid parameters.

Platform	Location
Windows XP	C:\Einstellungen und Dokumente\<UserName>\ vnaJ.2.7\config C:\documents and settings\<UserName>\ vnaJ.2.7\config
Windows VISTA	C:\Benutzer\<UserName>\vna\config C:\users\<UserName>\ vnaJ.2.7\config
Windows7	??? \ vnaJ.2.7\config
Mac OSX	??? / vnaJ.2.7/config
SUSE Linux 11	??? / vnaJ.2.7/config

Additional configuration files may be created inside this directory.

See also chapter "Options" on page 86.

Changing location

The storage location can be changed by specifying a user defined directory when calling vna/J.

The basic command line for calling vna/J is:

```
java -jar vnaj.2.7.0jar
```

Adding this parameter

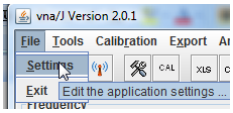
```
java -Duser.home=c:/temp -jar vnaj.2.7.0jar
```

stores all vna/J data inside the folder c:/temp.

Editing

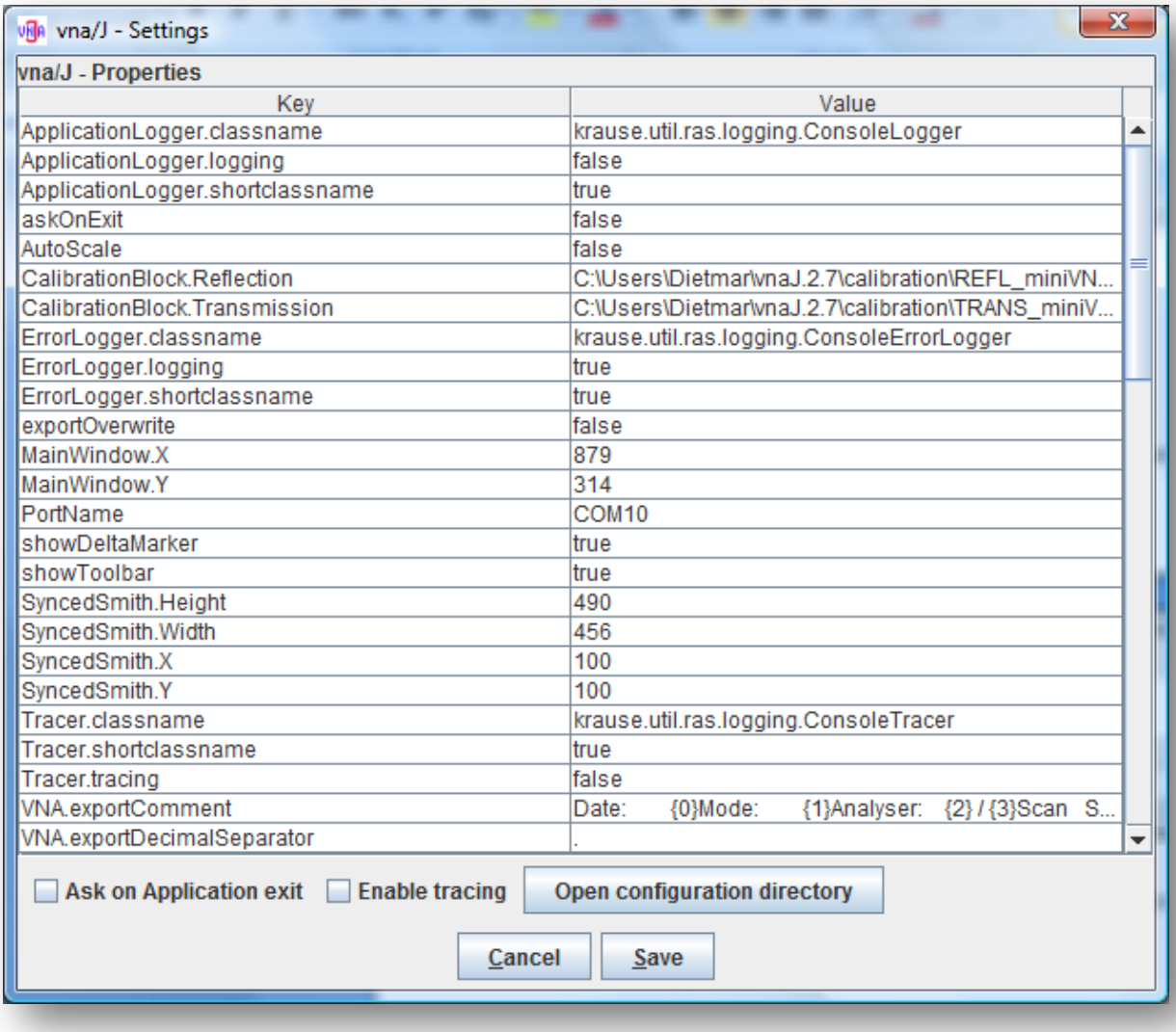
CAUTION: Make changes inside the configuration window with care! When the application does not work correctly, first try to delete the configuration files and start from scratch.

See chapter "Application does not start" on page 109

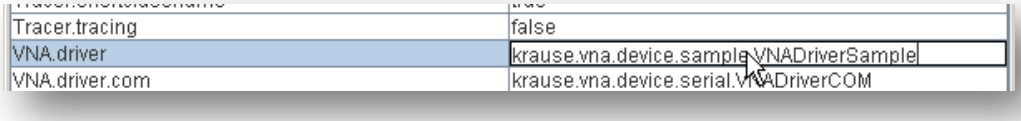
You can open the configuration dialog via the menu entry 

or this toolbar button 

The internal configuration variables for the vna/J application are then displayed:



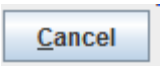
You can edit an entry (right column) by clicking in the value field and pressing F2:



End the editing by clicking on another entry in the table.

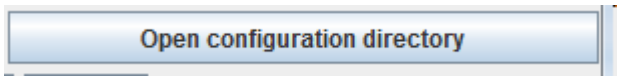
When finished, click the 

button, to write it to the active configuration set. The configuration data is saved to disc when you close the application.

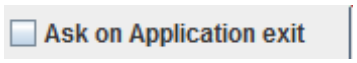
Clicking the 

button, reverts all changes and closes the window.

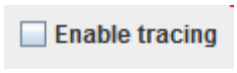
Options



Clicking the buttons directly opens the systems file browser on the configuration directory of vna/J.



Setting this checkmark opens a confirmation box when user wants to close the application.



Enables error logging. This is usually only needed for debugging purposes.

***Hint**: Enabling tracing affects the overall application perfomance*

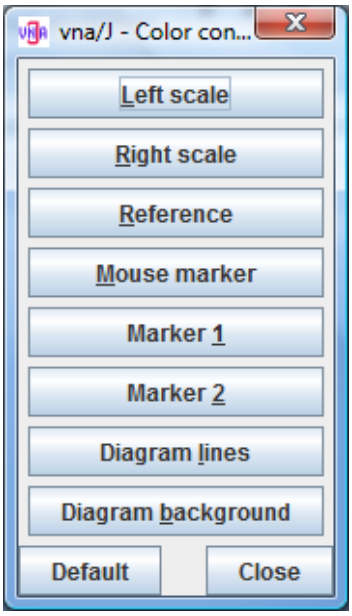
Colour settings

The colours used in the diagram area can be customized by the user.

Clicking on the toolbar icon  or using the FILE/COLORS menu entry opens the colour configuration dialog:

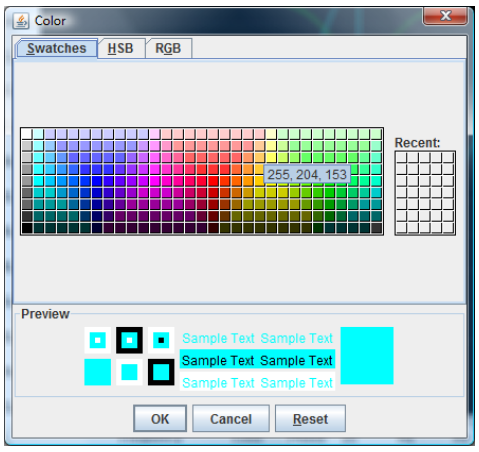
Here the user can change the colours of the following image panel components:

- The colour used to draw the values for the scale selected in the left dropdown list.
- The colour used to draw the values for the scale selected in the right dropdown list.
- The colour of the MOUSE marker text field. As the mouse marker is not drawn on the diagram, this sets only the colour of the marker name.
- The colour of MARKER 1. This sets the colour which is used to draw it on the diagram as well as the name of the marker.
- The colour of MARKER 2. This sets the colour which is used to draw it on the diagram as well as the name of the marker.
- The colour of the horizontal dotted-lines in the diagram
- The background colour of the diagram area.



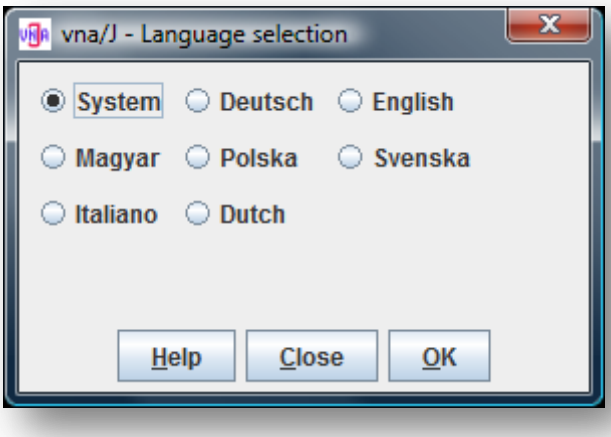
Clicking the OK button uses the selected colours, updates the image panel and saves them to the configuration file on application termination.

Clicking on one of the buttons opens a colour selection dialog, where the user can fine tune the colour of the selected element.



Language settings

The application currently supports these languages:



Usually the language for the application is determined automatically based in the environment under which the application is running. Means; launching the application on a Windows© PC with locale GERMAN, all messages, GUI elements and formatting will be done in German.

If this detection does not work correctly or you want to force the application to start in a specific language, the language can be set using this dialog.

- Selecting a specific language means, after an application restart, the selected language is used as application language despite the locale of the platform on which vna/J is running.
- Select the "System" option means, that the application language is determined by the locale of the platform on which vna/J is running.

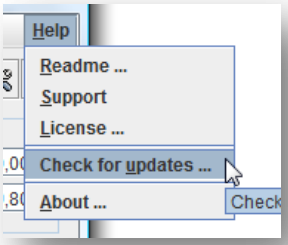
Remark: If someone has some spare-time, he can provide translations for his native language. To get a basic idea, what has to be done, check the "Translation Guide" on http://download.dl2sba.com/vnaj/2.7/TranslationGuide.pdf.

Simply send me an email to vnaj@dl2sba.de and I will provide you the necessary files.

A very limited number of hams already have contributed their work to the ham community - feel free to be one of them - see chapter 2Acknowledgements" on 7.

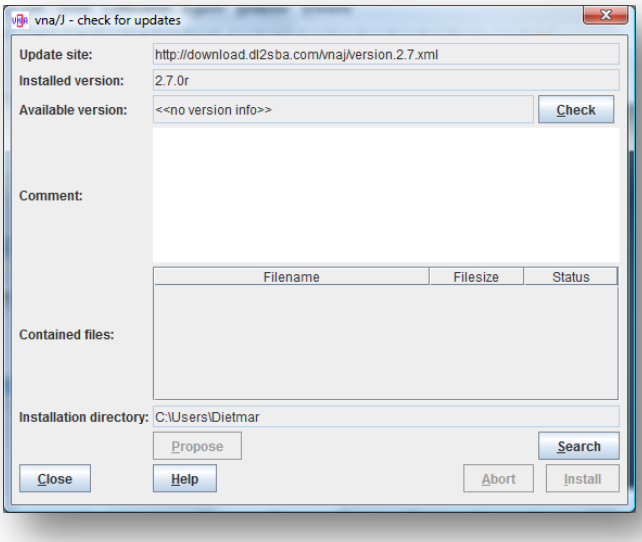
Update

Starting with version 2.7 an update check function is included in vna/J.



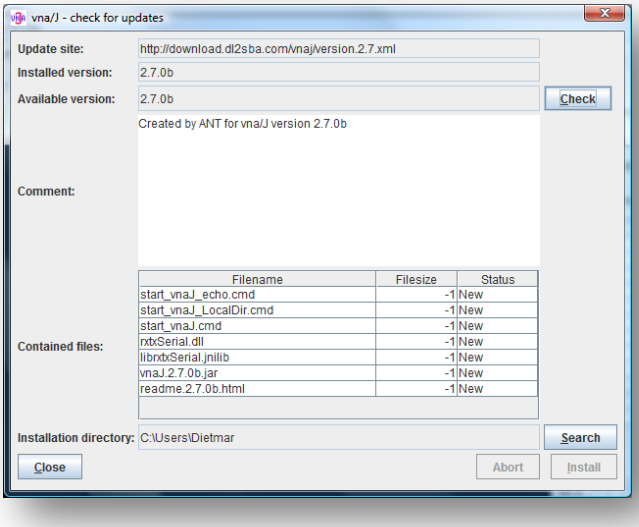
Selecting the "Check for updates" menu entry open the update dialog of vna/J.

Initially only the current version of vna/J, here "2.7.0r" is displayed.

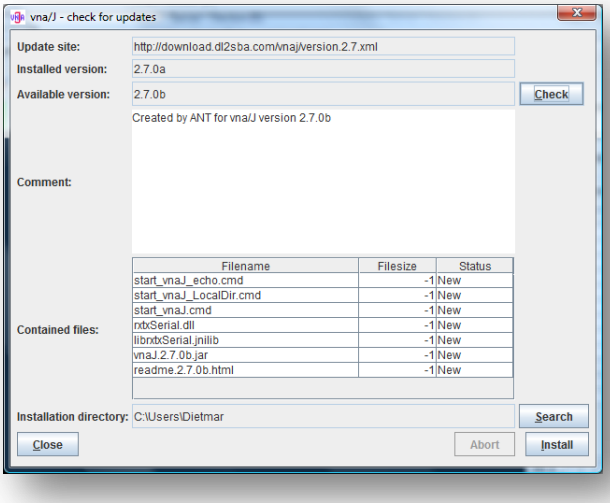


Selecting the "Check" button reads a version information file from the vna/J download website.

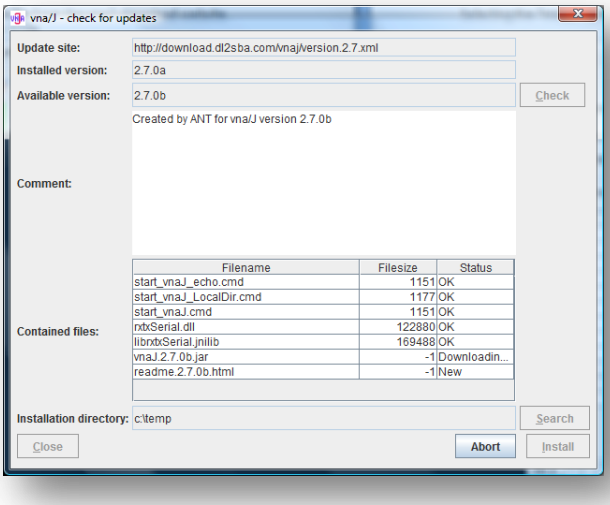
- A short description of the new version is displayed in the "Comment" field.
- All includes files in this version package are displayed in the list.



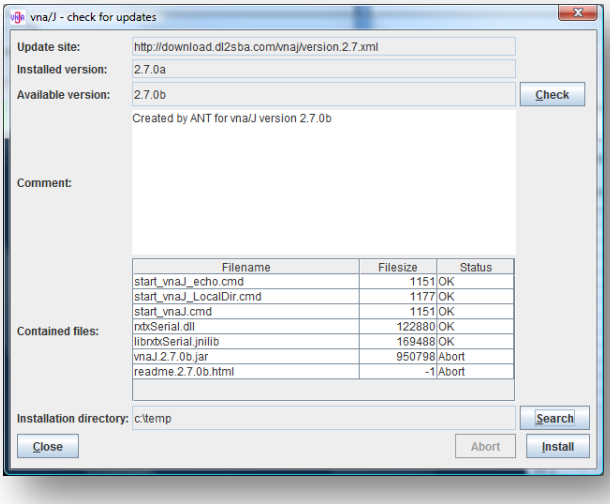
If the version on the website is newer then the currently installed version, the "Install" button is enabled.



Selecting the "Install" button starts the download of all the files contained in this version package.



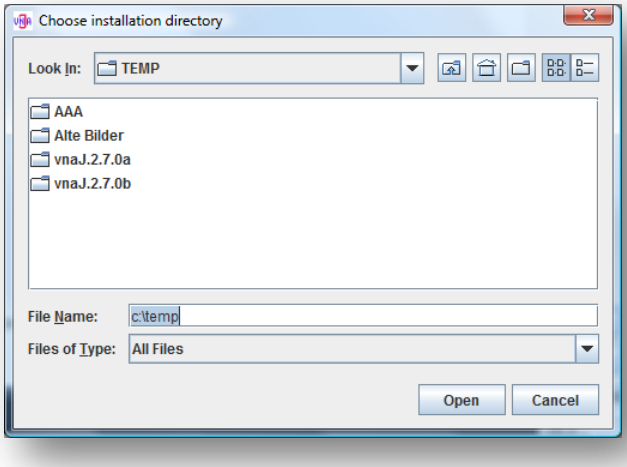
The download status of each file is displayed in the list. The download can be aborted clicking the "Abort" button. All further downloads are aborted:



The location, where the downloaded files are stored is displayed in "Installation directory" and can be changed using the "Search" button.

Selecting the PROPOSE button, sets the installation directory name to the parent directory of the currently running application and appends the version identifier displayed in field **available version.**

After successfully downloading the new version, it can be started as described in the installation manual.



Note: *During checking for a new version and downloading this new version, NO information is transmitted to any website! Only the file, displayed in the field "Update site" is downloaded and all files described in this file are downloaded to the selected location.*

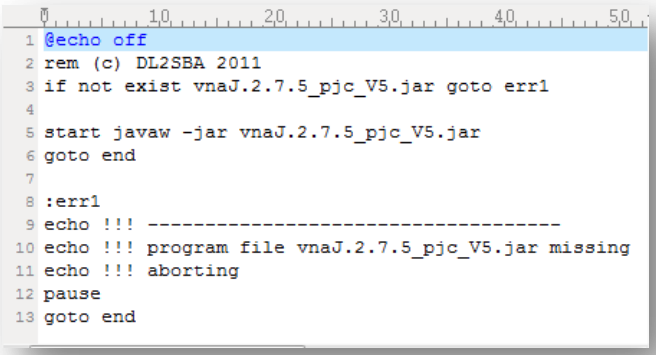
It is strongly recommended to download any version update into a separate directory on the local machine to avoid any version issues. Use the PROPOSE button to create a new directory name.

Do NOT download any new version to the directory where the currently running version is installed!

Behind a proxy server

If you are running vna/J behind a proxy server (see http://en.wikipedia.org/wiki/Proxy_server) which is not transparent to the user, you have to provide additional information during the start of vna/J.

A good place to provide this information is the start_vnaj.cmd provided in the download area:

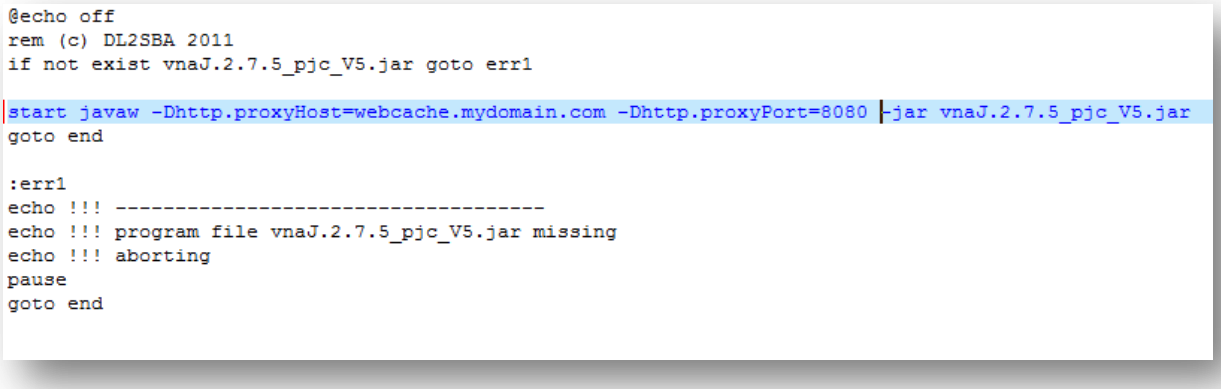


```
@echo off
rem (c) DL2SBA 2011
if not exist vnaJ.2.7.5_pjc_V5.jar goto err1

start javaw -jar vnaJ.2.7.5_pjc_V5.jar
goto end

:err1
echo !!! -----------------------------------
echo !!! program file vnaJ.2.7.5_pjc_V5.jar missing
echo !!! aborting
pause
goto end
```

You have to ask your system administrator for these parameters:

- name or IP-adress of your proxy server
- IP-port on the proxy server

In my example the values are **webcache.mydomain.com** as the address of the proxy server and **8080** as the IP-port of the proxy server. So edit the cmd-file to:



```
@echo off
rem (c) DL2SBA 2011
if not exist vnaJ.2.7.5_pjc_V5.jar goto err1

start javaw -Dhttp.proxyHost=webcache.mydomain.com -Dhttp.proxyPort=8080 -jar vnaJ.2.7.5_pjc_V5.jar
goto end

:err1
echo !!! -----------------------------------
echo !!! program file vnaJ.2.7.5_pjc_V5.jar missing
echo !!! aborting
pause
goto end
```

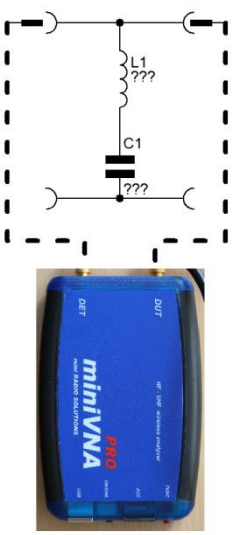
***Hint**: If you are running Linux or Mac OS, you can copy the part after "start …" into your command window and execute vna/J manually.*

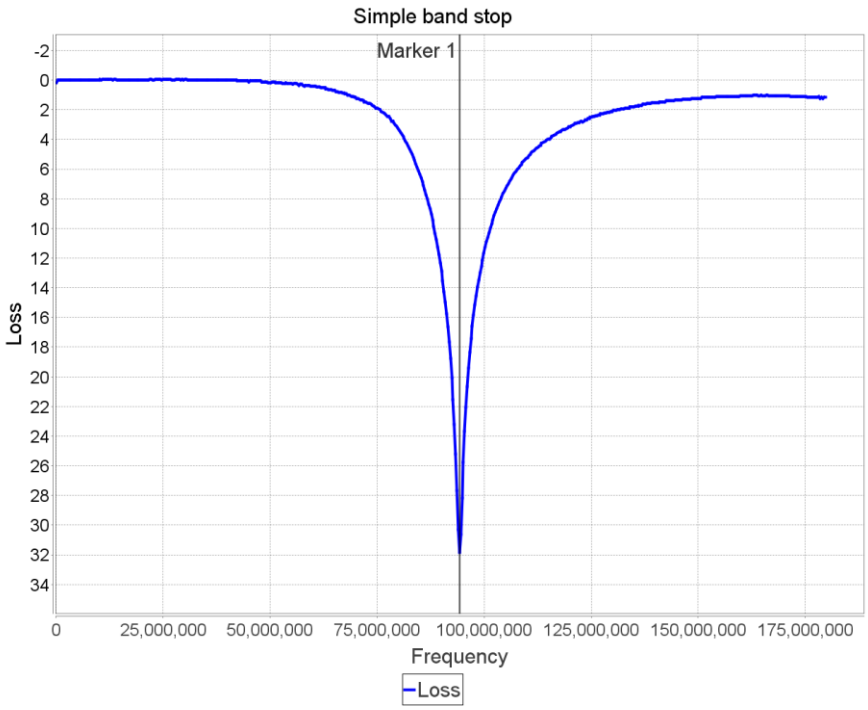
***Note:** I do not store this information anywhere inside vna/J or transmit it to the update website. If your proxy server requires some kind of authentication data, you have to download the files manually from my website httP://vnaj.dl2sba.com as this will be never supported by vna/J.*

Samples

Transmission mode

We have a simple serial LC filter used as a band stop. This gives a measurement curve with vna/J:

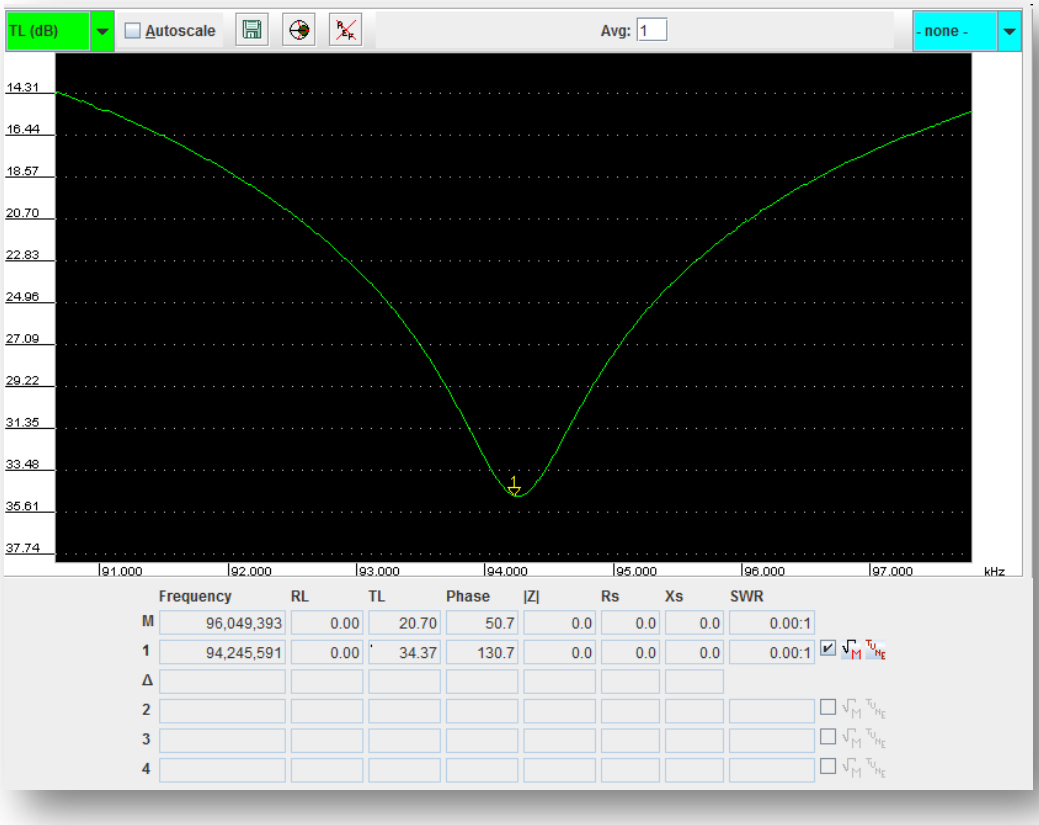




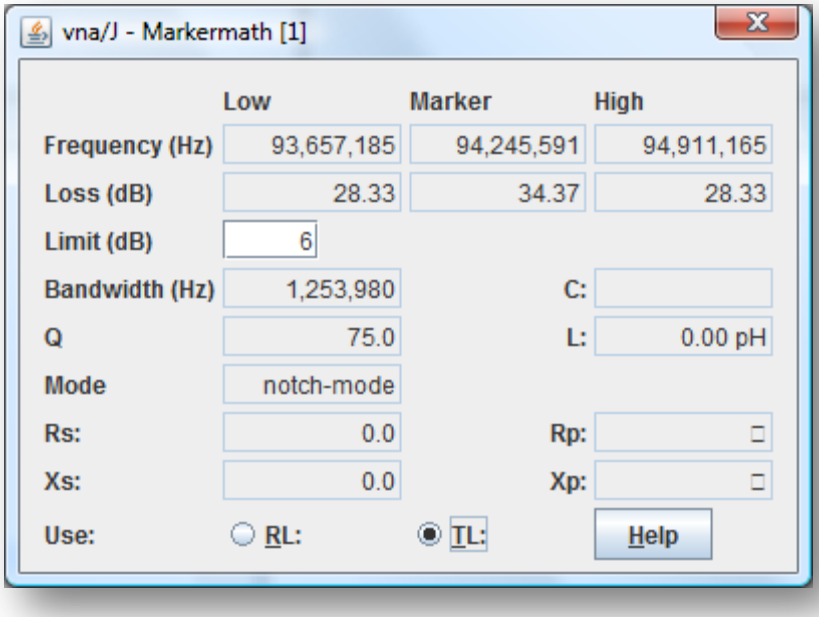
To measure the data for this filter, follow this procedure:

- Switch to transmission mode.
- Switch to free-run mode to get constant updates of the values.
- Click on the diagram area with the left-mouse button
- Select the MAX-search mode for the loss field of marker 1
- Click the math-symbol for marker 1.

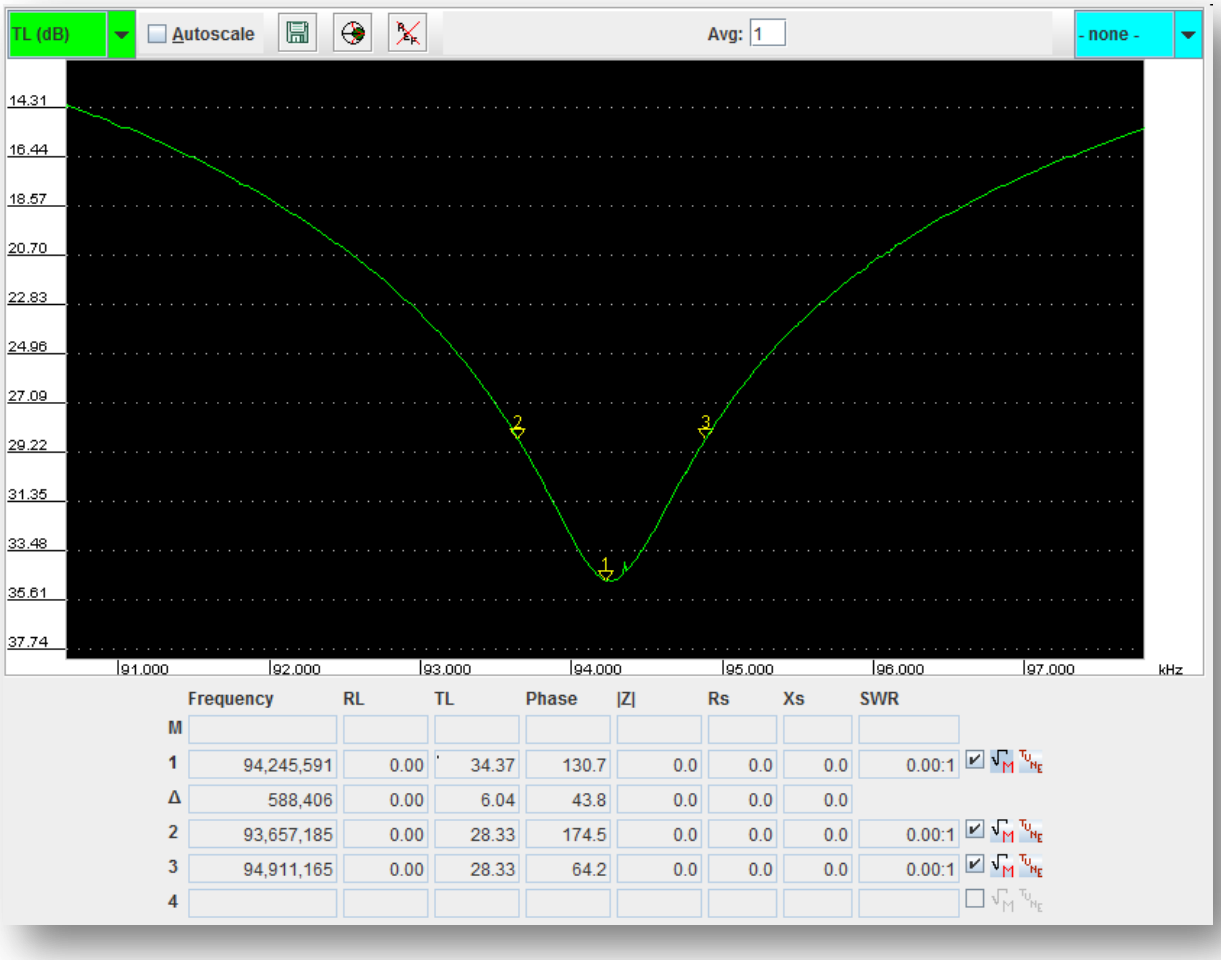
The main window should look like this:



and cursor 1 should be set to the maximum transmission loss, here about 34dB at 94.2 MHz. The marker-math dialog should display these values:



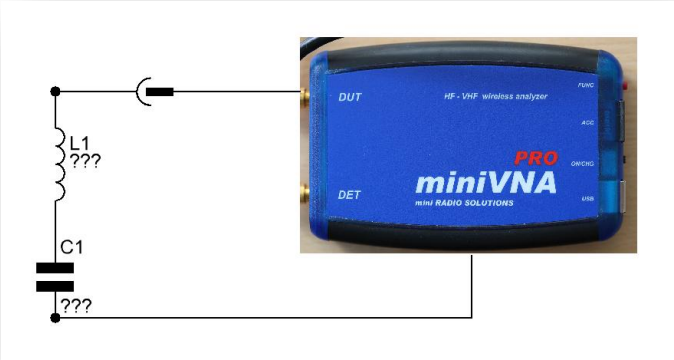
This can be verified using the markers 2 and 3 manually:



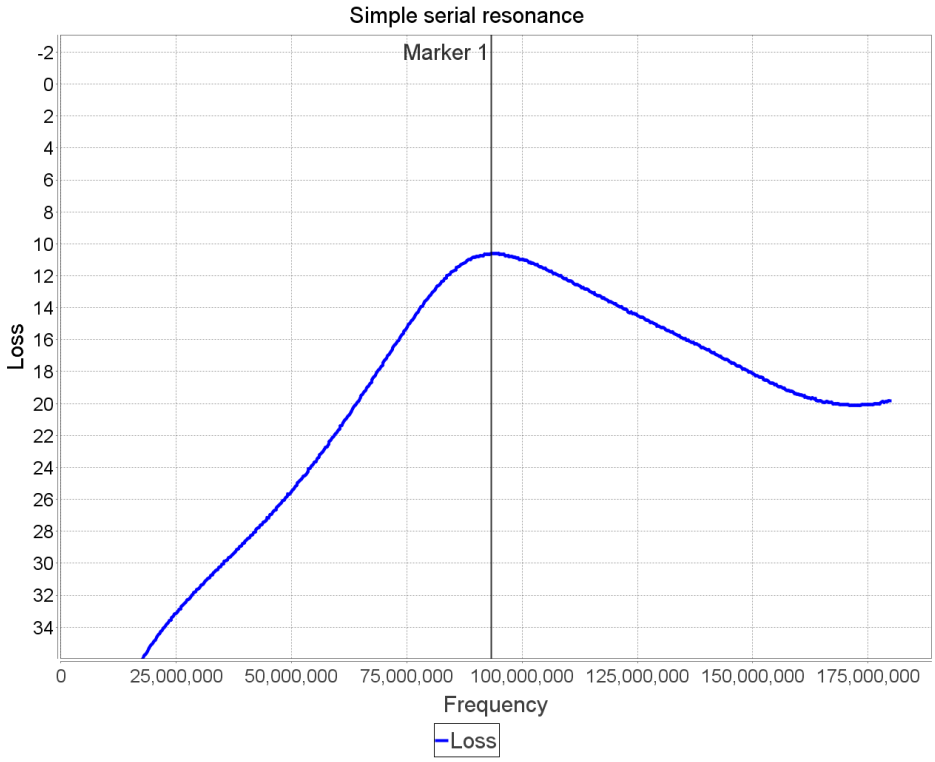
	Frequency	RL	TL	Phase	|Z|	Rs	Xs	SWR
M								
1	94,245,591	0.00	34.37	130.7	0.0	0.0	0.0	0.00:1
Δ	588,406	0.00	6.04	43.8	0.0	0.0	0.0	
2	93,657,185	0.00	28.33	174.5	0.0	0.0	0.0	0.00:1
3	94,911,165	0.00	28.33	64.2	0.0	0.0	0.0	0.00:1
4								

Reflection mode

We have a simple serial LC circuit connected to DUT.



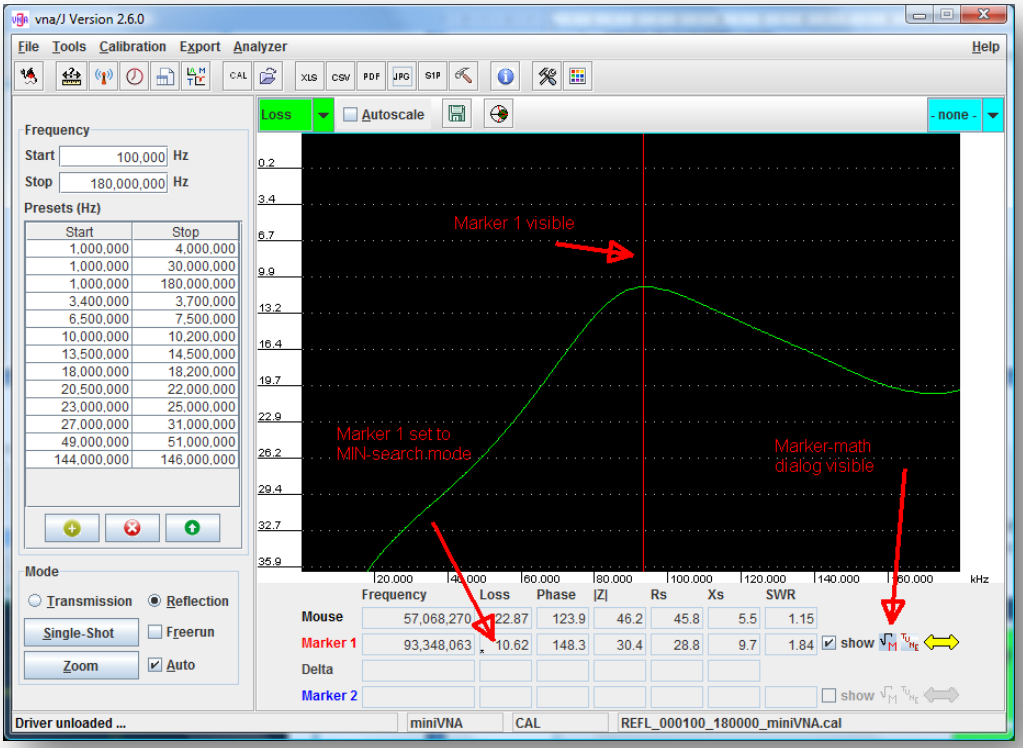
This gives a measurement curve with vna/J.



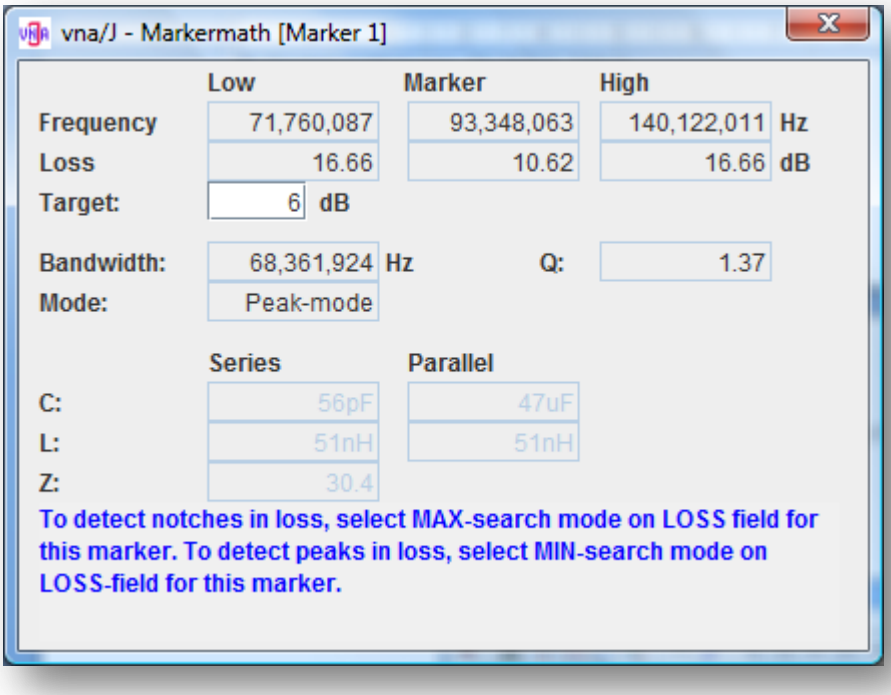
To measure the data for this circuit, follow this procedure:

- Switch to reflection mode
- Switch to free-run mode to get constant updates of the values.
- Click on the diagram area with the left-mouse button
- Select the MAX-search mode for the loss field of marker 1
- Click the math-symbol for marker 1.

The main window should look like this:

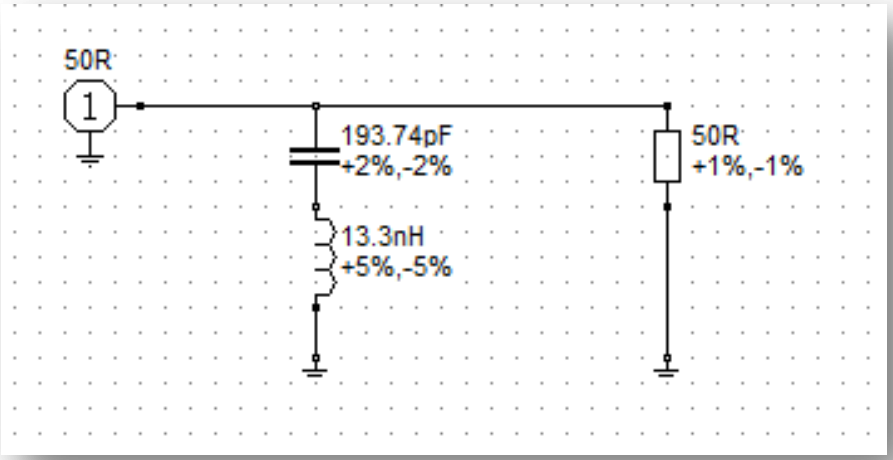


and the marker-math dialog should display these values:

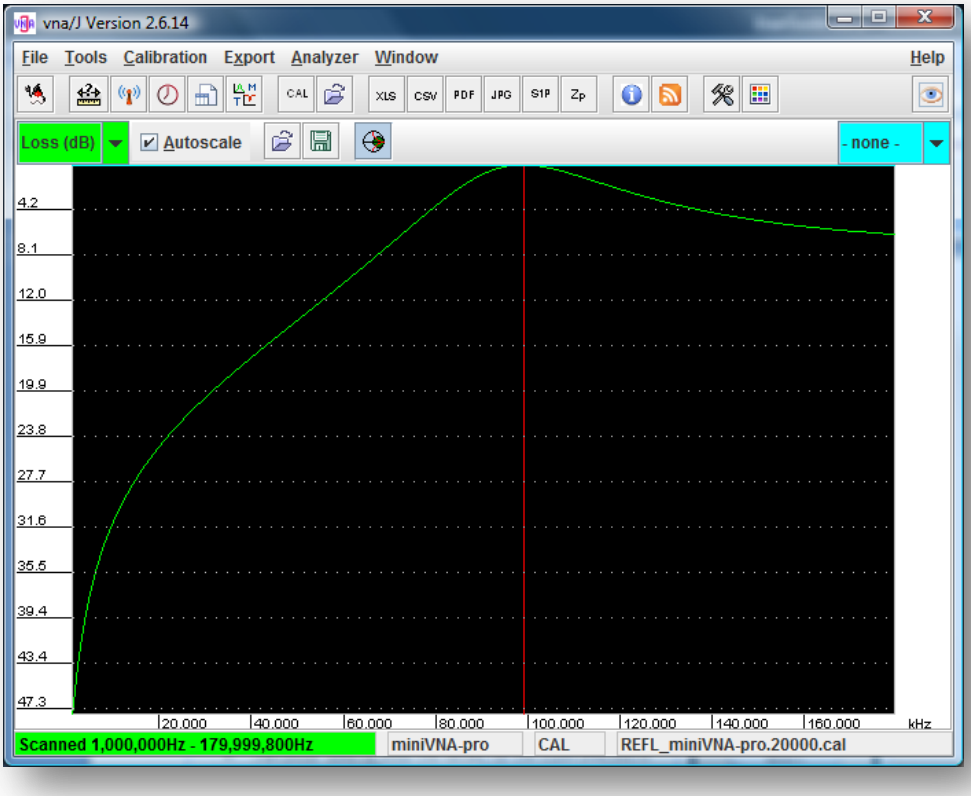


Comparison with simulation

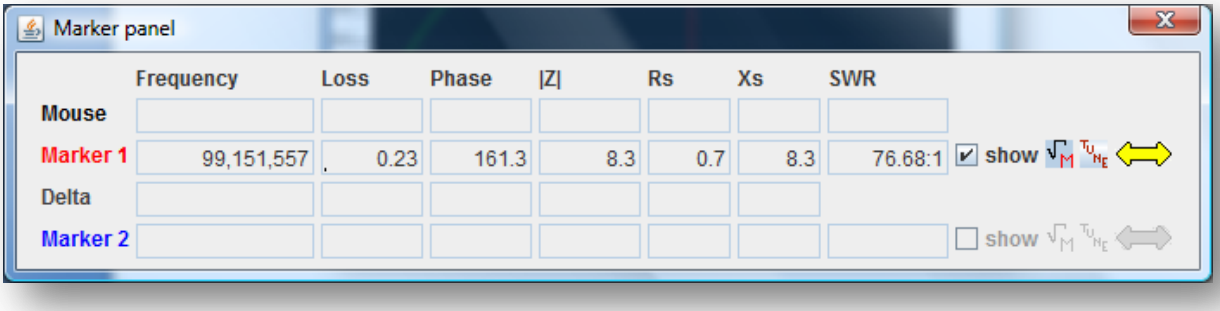
I've build up this simple circuit:



where (1) is the miniVNA pro. Using vna/J with the miniVNA pro I'll get this scan:

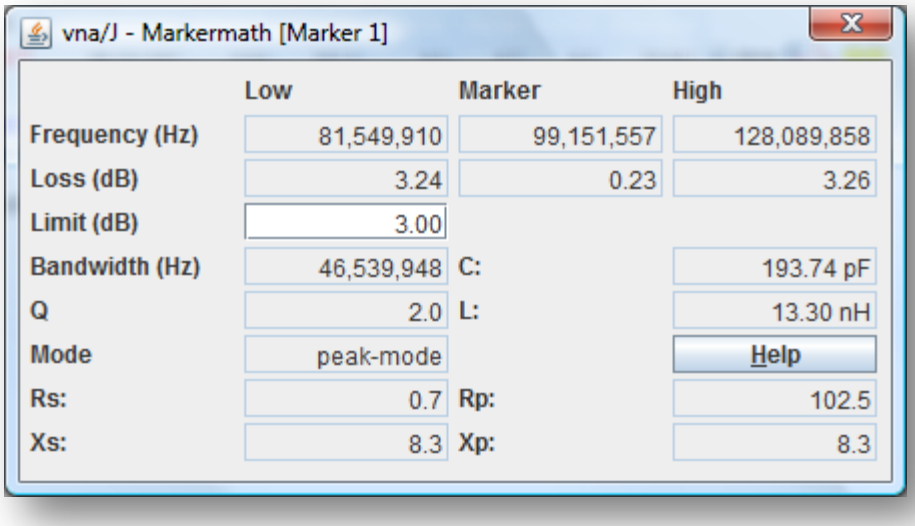


Setting the search-mode of cursor 1 to minimum

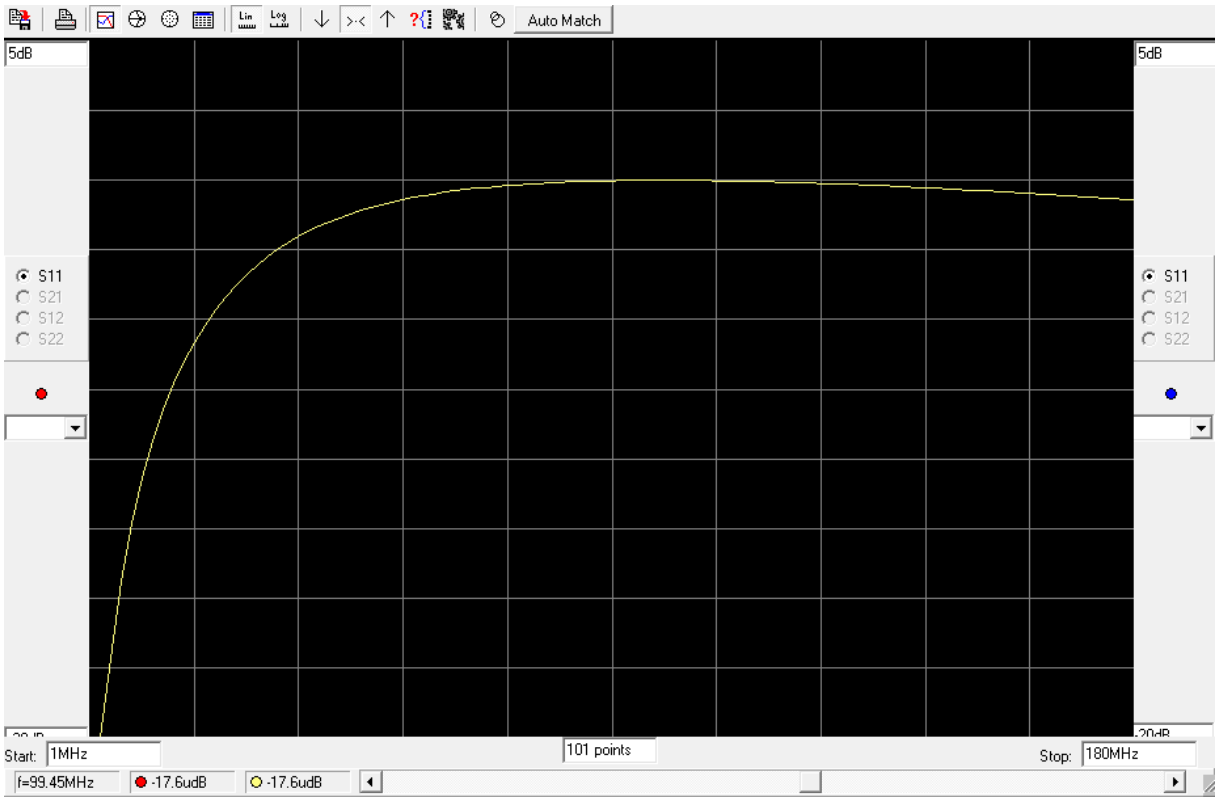


it automatically sets cursor 1 to 99.15 MHz - the minimum loss.

Opening the cursor-math dialog for cursor 1 gives this:



When I enter now the values for C=193,74pF and L=13,3nH I get this simulation inside RFSim99:



As you can see, the minimum loss is also at about 99,45MHz ☺

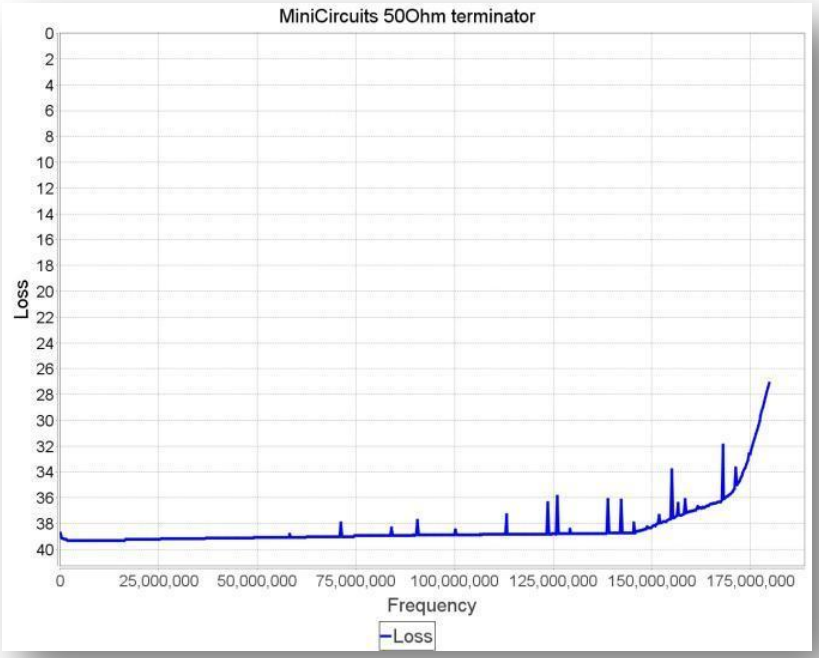
RFSim99 can be found here:

http://elektronikbasteln.pl7.de/rfsim99-filter-berechnung.html

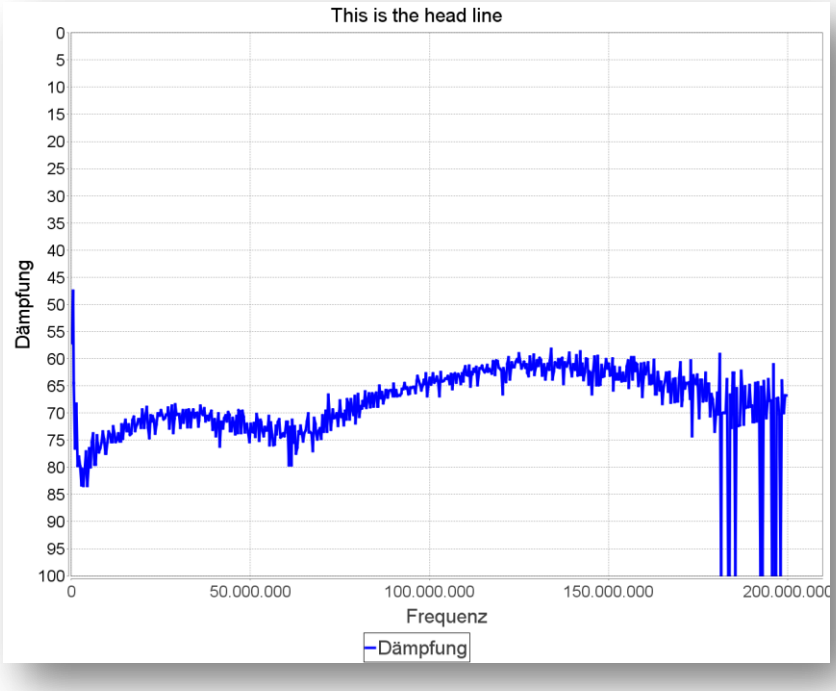
Sample measurement

MiniCircuits 50Ω terminator

miniVNA

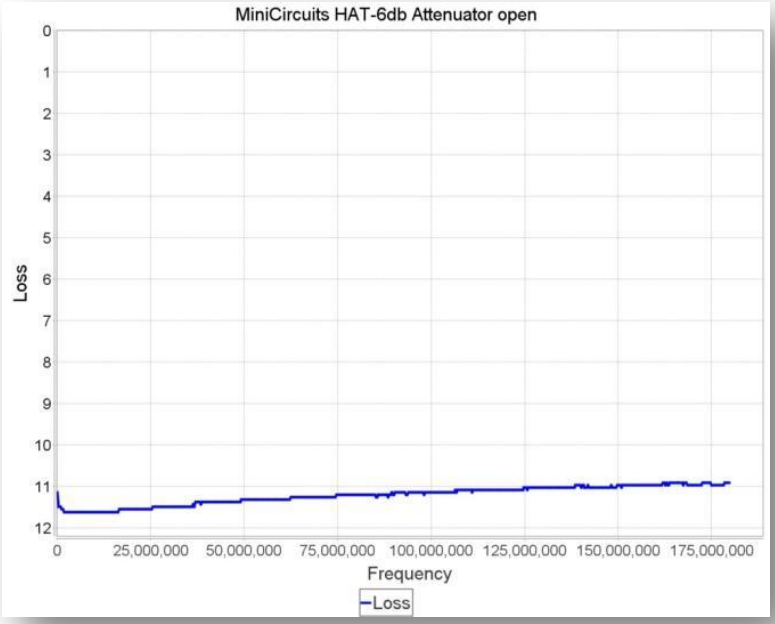


miniVNA PRO

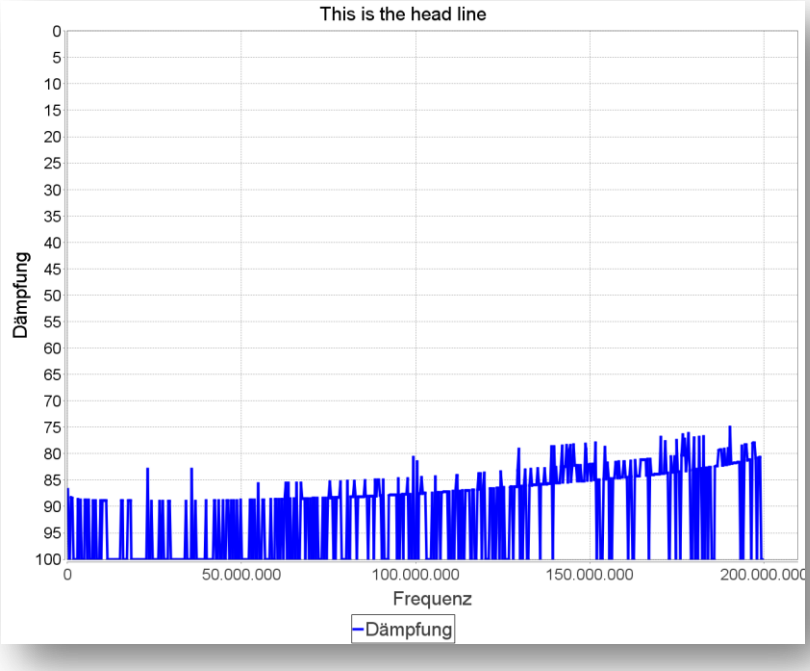


MiniCircuits HAT-6dB attenuator open end

miniVNA

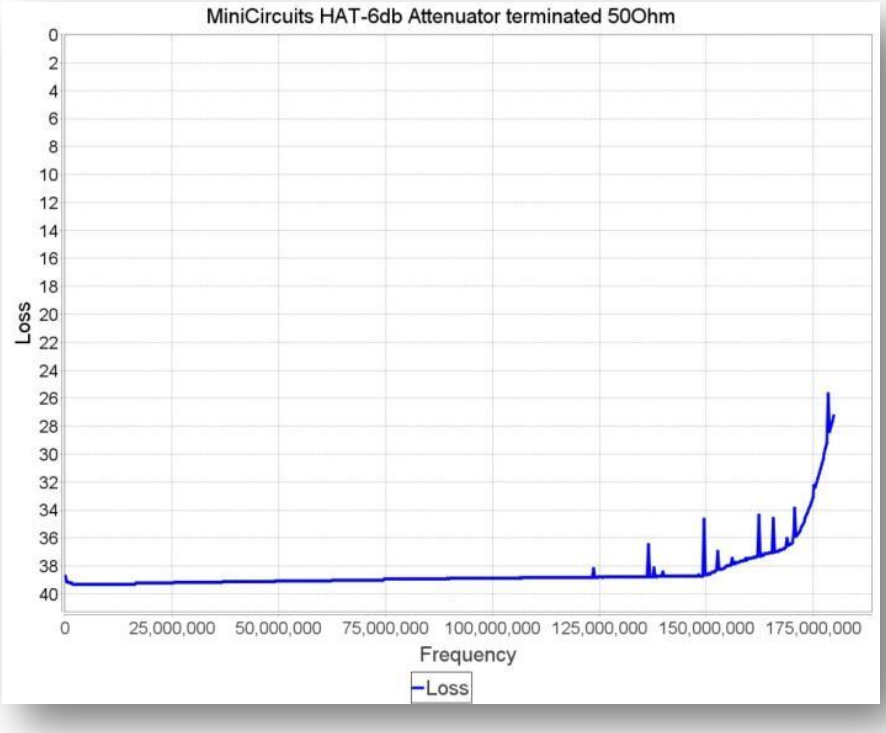


miniVNA PRO

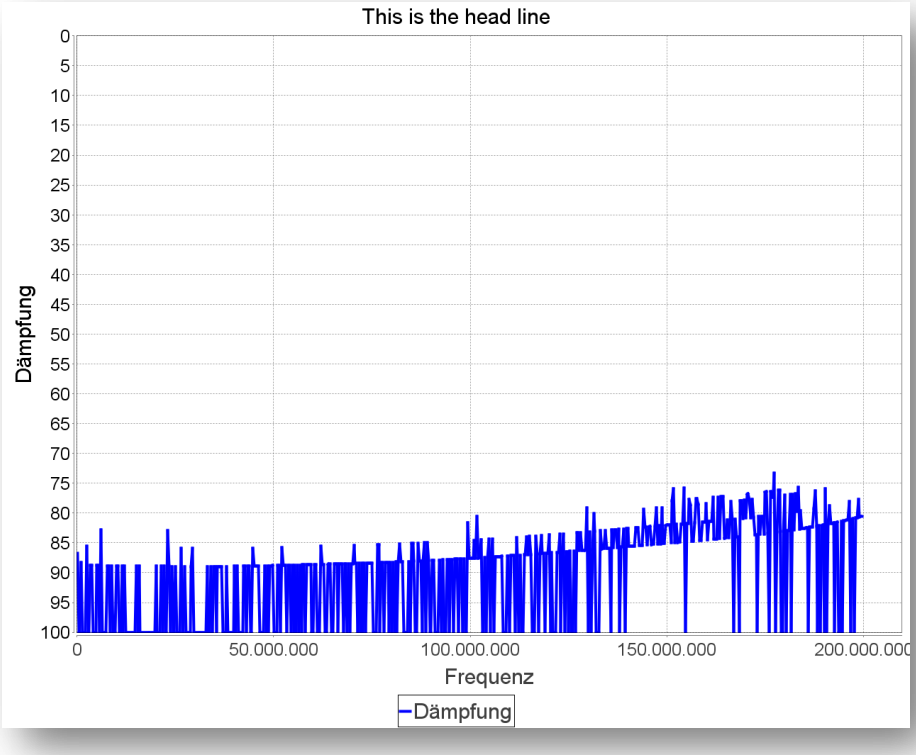


MiniCircuits HAT-6dB attenuator terminated 50Ohm

miniVNA



miniVNA PRO



Hints and tips

Error: No data character received: 0 0 missing - displayed in status bar

Reason: This indicates, that the VNA is currently not responding on the selected port.

This may happen, if the VNA is plugged into different USB-port. On some operation systems now another COM-port is assigned to the VNA.

Solution: Please select the correct port, to which your VNA is connected. See also chapter "Interface" on page 35.

Changing location for configuration data

The default storage location is described in chapter "Storage location" on page 83.

The storage location can be changed by specifying a user defined directory when calling vna/J.

Adding this parameter

```
java -Duser.home=c:/temp -jar vnaj.2.7.0jar
```

stores all vna/J data inside the folder c:/temp.

Running from a removable media

It is possible to run vna/J from a removable media, i.e. a memory stick. This media then can be used to launch vna/J on another machine if the following prerequisites on the other machine are satisfied:

- A JAVA runtime environment is installed
- The FTDI drivers are installed

Copy all files from the local installation directory to a directory on the removable media.

Create yourself a startup script (Windows-batch file, Linux-shell script) to launch vna/J with this command:

```
java -Duser.home=./config -jar vnaj.2.7.0jar
```

Where ./config is the name of the directory where all vna/J configurations are stored.

You can also copy the calibration files from local machine /*.cal) to the calibration directory on the removable media.

Reporting a problem

If you encounter any problems with vna/J please provide me the following details in your error report. Without these information, I cannot assist you effectivly.

Operating system

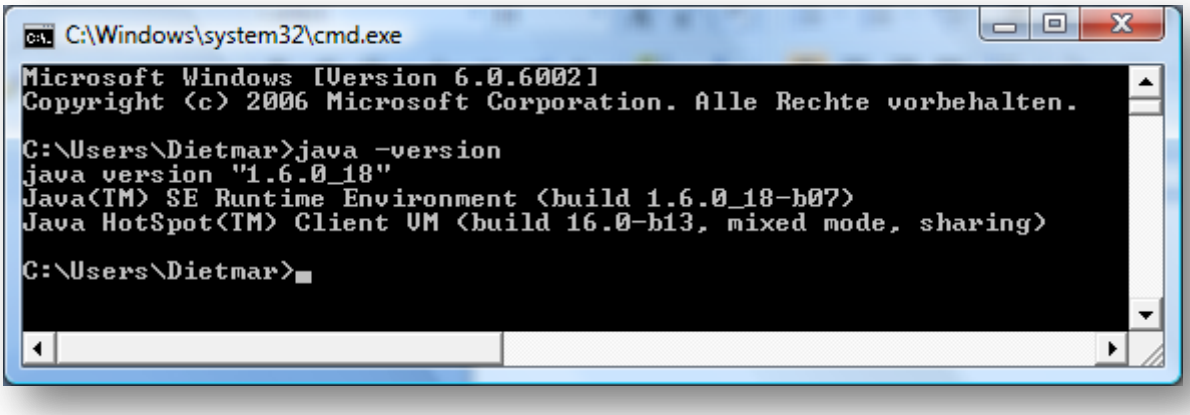
Provide me some details regarding the operating system you're using (i.e. Type, Name, Version, Patchlevel, …)

JAVA environment

Open a command shell in your operating system an enter the following command:

```
java -version
```

This should give you a display like this:



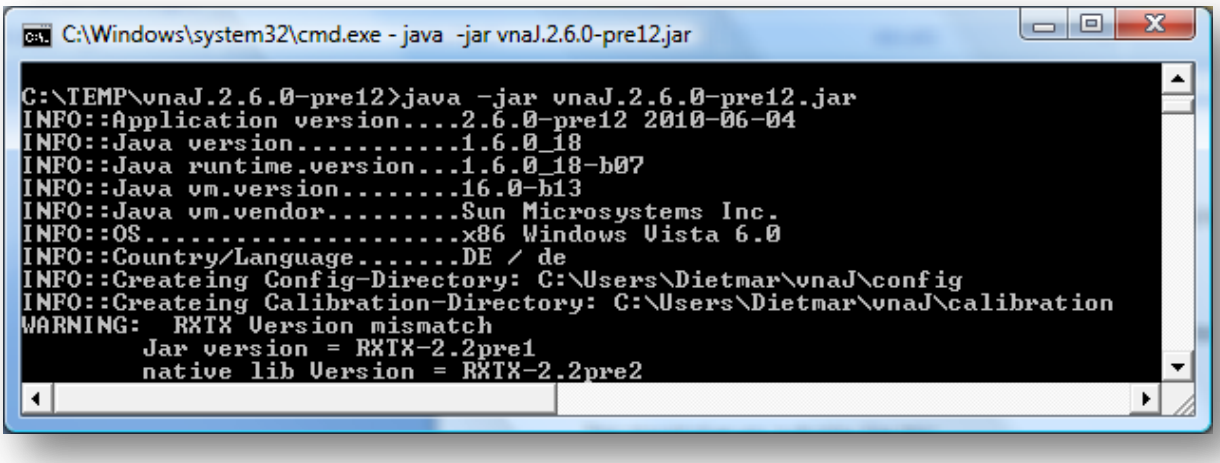
Send me the information displayed after you've entered the command.

vna/J startup info

Open a command shell in your operating system an enter the following command:

```
java -jar vnaJ.2.7.0.jar
```

Replace the name of the jar-file with the one, you're using. This should give a display like this:



Send me the information displayed after you've entered the command.

vna/J

Send me screenshots of the errors, you've found in the application with a detailed description, how I can reproduce this problem.

Enable logging

To debug problems using this application, it may be sometime necessary to enable the build in logging of the application.

Please follow these steps:

1. Open a command line window and navigate to the directory, where you've stored the JAR-file.
2. Launch the application by entering

   ```
   java -jar vnaJ????.jar 1>trace.txt 2>error.txt
   ```

   in the command line window.

   Note: Replace ??? with the current name of the JAR you are currently using.
3. Now the application should start as usual.
4. Open the settings dialog (menu FILE/SETTINGS)
5. Check the box "Enable tracing"
6. Close the settings dialog using the "Save" button
7. Now try to reproduce the failure etc.
8. When finished reproducing the error, reopen the settings dialog.
9. Uncheck the box "Enable tracing"
10. Close the settings dialog using the "Save" button
11. Close the application via the menu **FILE/EXIT**
12. Send the files **trace.txt** and **error.txt** together with a detailed description of your environment (hardware, software …) and the found problem to **vnaj@dl2sba.de**.
13. … hope ☺

Application does not start

First of all, try to remove all previously created configuration information.

This can be easily done, by renaming the configuration directory as outlined in chapter Configuration on page 83.to a different name (i.e. vnaJ.2.7 to vnaJ.2.7.old)

When the application is restarted, the directories are recreated and the settings are initialized with default values.

Links

http://groups.yahoo.com/group/analyzer_iw3hev

An active YAHOO group related to the miniVNA as well as the miniVNA PRO.

In the files sections under **Files > Subjects - Off Topic - (Brainstorming) > SUSE Install for DL2SBA app.** find a detailled guide howto install the stuff on UBUNTU as well as SUSES Linux versions.

http://www.miniradiosolutions.com

Company that produces the miniVNA as well as the miniVNA PRO

http://max6.pl

Company that produces the MAX6

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English

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b. den Schutzgegenstand, allein oder in Sammelwerke aufgenommen, öffentlich zu zeigen und zu verbreiten.

Das vorgenannte Nutzungsrecht wird für alle bekannten sowie für alle noch nicht bekannten Nutzungsarten eingeräumt. Es beinhaltet auch das Recht, solche Änderungen am Schutzgegenstand vorzunehmen, die für bestimmte nach dieser Lizenz zulässige Nutzungen technisch erforderlich sind. Weitergehende Änderungen oder Abwandlungen sind jedoch untersagt. Alle sonstigen Rechte, die über diesen Abschnitt hinaus nicht ausdrücklich durch den Lizenzgeber eingeräumt werden, bleiben diesem allein vorbehalten. Soweit Datenbanken oder Zusammenstellungen von Daten Schutzgegenstand dieser Lizenz oder Teil dessen sind und einen imma-

terialgüterrechtlichen Schutz eigener Art genießen, verzichtet der Lizenzgeber auf sämtliche aus diesem Schutz resultierenden Rechte.

4. Bedingungen

Die Einräumung des Nutzungsrechts gemäß Abschnitt 3 dieser Lizenz erfolgt ausdrücklich nur unter den folgenden Bedingungen:

a. Sie dürfen den Schutzgegenstand ausschließlich unter den Bedingungen dieser Lizenz verbreiten oder öffentlich zeigen. Sie müssen dabei stets eine Kopie dieser Lizenz oder deren vollständige Internetadresse in Form des Uniform-Resource-Identifier (URI) beifügen. Sie dürfen keine Vertrags- oder Nutzungsbedingungen anbieten oder fordern, die die Bedingungen dieser Lizenz oder die durch diese Lizenz gewährten Rechte beschränken. Sie dürfen den Schutzgegenstand nicht unterlizenzieren. Bei jeder Kopie des Schutzgegenstandes, die Sie verbreiten oder öffentlich zeigen, müssen Sie alle Hinweise unverändert lassen, die auf diese Lizenz und den Haftungsausschluss hinweisen. Wenn Sie den Schutzgegenstand verbreiten oder öffentlich zeigen, dürfen Sie (in Bezug auf den Schutzgegenstand) keine technischen Maßnahmen ergreifen, die den Nutzer des Schutzgegenstandes in der Ausübung der ihm durch diese Lizenz gewährten Rechte behindern können. Dieser Abschnitt 4.a) gilt auch für den Fall, dass der Schutzgegenstand einen Bestandteil eines Sammelwerkes bildet, was jedoch nicht bedeutet, dass das Sammelwerk insgesamt dieser Lizenz unterstellt werden muss. Sofern Sie ein Sammelwerk erstellen, müssen Sie auf die Mitteilung eines Lizenzgebers hin aus dem Sammelwerk die in Abschnitt 4.c) aufgezählten Hinweise entfernen.
b. Die Rechteeinräumung gemäß Abschnitt 3 gilt nur für Handlungen, die nicht vorrangig auf einen geschäftlichen Vorteil oder eine geldwerte Vergütung gerichtet sind ("nicht-kommerzielle Nutzung", "Non-commercial-Option"). Wird Ihnen in Zusammenhang mit dem Schutzgegenstand dieser Lizenz ein anderer Schutzgegenstand überlassen, ohne dass eine vertragliche Verpflichtung hierzu besteht (etwa im Wege von File-Sharing), so wird dies nicht als auf geschäftlichen Vorteil oder geldwerte Vergütung gerichtet angesehen, wenn in Verbindung mit dem Austausch der Schutzgegenstände tatsächlich keine Zahlung oder geldwerte Vergütung geleistet wird.
c. Die Verbreitung und das öffentliche Zeigen des Schutzgegenstandes oder ihn enthaltender Sammelwerke ist Ihnen nur unter der Bedingung gestattet, dass Sie, vorbehaltlich etwaiger Mitteilungen im Sinne von Abschnitt 4.a), alle dazu gehörenden Rechtevermerke unberührt lassen. Sie sind verpflichtet, die Rechteinhaberschaft in einer der Nutzung entsprechenden, angemessenen Form anzuerkennen, indem Sie - soweit bekannt - Folgendes angeben:

    i. Den Namen (oder das Pseudonym, falls ein solches verwendet wird) des Rechteinhabers und / oder, falls der Lizenzgeber im Rechtevermerk, in den Nutzungsbedingungen oder auf andere angemessene Weise eine Zuschreibung an Dritte vorgenommen hat (z.B. an eine Stiftung, ein Verlagshaus oder eine Zeitung) ("Zuschreibungsempfänger"), Namen bzw. Bezeichnung dieses oder dieser Dritten;
    ii. den Titel des Inhaltes;
    iii. in einer praktikablen Form den Uniform-Resource-Identifier (URI, z.B. Internetadresse), den der Lizenzgeber zum Schutzgegenstand angegeben hat, es sei denn, dieser URI verweist nicht auf den Rechtevermerk oder die Lizenzinformationen zum Schutzgegenstand.

    Die nach diesem Abschnitt 4.c) erforderlichen Angaben können in jeder angemessenen Form gemacht werden; im Falle eines Sammelwerkes müssen diese Angaben das Minimum darstellen und bei gemeinsamer Nennung mehrerer Rechteinhaber derge-

stalt erfolgen, dass sie zumindest ebenso hervorgehoben sind wie die Hinweise auf die übrigen Rechteinhaber. Die Angaben nach diesem Abschnitt dürfen Sie ausschließlich zur Angabe der Rechteinhaberschaft in der oben bezeichneten Weise verwenden. Durch die Ausübung Ihrer Rechte aus dieser Lizenz dürfen Sie ohne eine vorherige, separat und schriftlich vorliegende Zustimmung des Lizenzgebers und / oder des Zuschreibungsempfängers weder explizit noch implizit irgendeine Verbindung zum Lizenzgeber oder Zuschreibungsempfänger und ebenso wenig eine Unterstützung oder Billigung durch ihn andeuten.

d. Die oben unter 4.a) bis c) genannten Einschränkungen gelten nicht für solche Teile des Schutzgegenstandes, die allein deshalb unter den Schutzgegenstandsbegriff fallen, weil sie als Datenbanken oder Zusammenstellungen von Daten einen immaterialgüterrechtlichen Schutz eigener Art genießen.
e. Bezüglich Vergütung für die Nutzung des Schutzgegenstandes gilt Folgendes:
    i. **Unverzichtbare gesetzliche Vergütungsansprüche**: Soweit unverzichtbare Vergütungsansprüche im Gegenzug für gesetzliche Lizenzen vorgesehen oder Pauschalabgabensysteme (zum Beispiel für Leermedien) vorhanden sind, behält sich der Lizenzgeber das ausschließliche Recht vor, die entsprechende Vergütung einzuziehen für jede Ausübung eines Rechts aus dieser Lizenz durch Sie.
    ii. **Vergütung bei Zwangslizenzen**: Sofern Zwangslizenzen außerhalb dieser Lizenz vorgesehen sind und zustande kommen, behält sich der Lizenzgeber das ausschließliche Recht auf Einziehung der entsprechenden Vergütung für den Fall vor, dass Sie eine Nutzung des Schutzgegenstandes für andere als die in Abschnitt 4.b) als nicht-kommerziell definierten Zwecke vornehmen, verzichtet für alle übrigen, lizenzgerechten Fälle von Nutzung jedoch auf jegliche Vergütung.
    iii. **Vergütung in sonstigen Fällen**: Bezüglich lizenzgerechter Nutzung des Schutzgegenstandes durch Sie, die nicht unter die beiden vorherigen Abschnitte (i) und (ii) fällt, verzichtet der Lizenzgeber auf jegliche Vergütung, unabhängig davon, ob eine Einziehung der Vergütung durch ihn selbst oder nur durch eine Verwertungsgesellschaft möglich wäre. Der Lizenzgeber behält sich jedoch das ausschließliche Recht auf Einziehung der entsprechenden Vergütung (durch ihn selbst oder eine Verwertungsgesellschaft) für den Fall vor, dass Sie eine Nutzung des Schutzgegenstandes für andere als die in Abschnitt 4.b) als nicht-kommerziell definierten Zwecke vornehmen.
f. Persönlichkeitsrechte bleiben - soweit sie bestehen - von dieser Lizenz unberührt.

5. Gewährleistung

SOFERN KEINE ANDERS LAUTENDE, SCHRIFTLICHE VEREINBARUNG ZWISCHEN DEM LIZENZGEBER UND IHNEN GESCHLOSSEN WURDE UND SOWEIT MÄNGEL NICHT ARGLISTIG VERSCHWIEGEN WURDEN, BIETET DER LIZENZGEBER DEN SCHUTZGEGENSTAND UND DIE EINRÄUMUNG VON RECHTEN UNTER AUSSCHLUSS JEGLICHER GEWÄHRLEISTUNG AN UND ÜBERNIMMT WEDER AUSDRÜCKLICH NOCH KONKLUDENT GARANTIEN IRGENDEINER ART. DIES UMFASST INSBESONDERE DAS FREISEIN VON SACH- UND RECHTSMÄNGELN, UNABHÄNGIG VON DEREN ERKENNBARKEIT FÜR DEN LIZENZGEBER, DIE VERKEHRSFÄHIGKEIT DES SCHUTZGEGENSTANDES, SEINE VERWENDBARKEIT FÜR EINEN BESTIMMTEN ZWECK SOWIE DIE KORREKTHEIT VON BESCHREIBUNGEN. DIESE GEWÄHRLEISTUNGSBESCHRÄNKUNG GILT NICHT, SOWEIT MÄNGEL ZU SCHÄDEN DER IN ABSCHNITT 6 BEZEICHNETEN ART

FÜHREN UND AUF SEITEN DES LIZENZGEBERS DAS JEWEILS GENANNTE VERSCHULDEN BZW. VERTRETENMÜSSEN EBENFALLS VORLIEGT.

6. Haftungsbeschränkung

DER LIZENZGEBER HAFTET IHNEN GEGENÜBER IN BEZUG AUF SCHÄDEN AUS DER VERLETZUNG DES LEBENS, DES KÖRPERS ODER DER GESUNDHEIT NUR, SOFERN IHM WENIGSTENS FAHRLÄSSIGKEIT VORZUWERFEN IST, FÜR SONSTIGE SCHÄDEN NUR BEI GROBER FAHRLÄSSIGKEIT ODER VORSATZ, UND ÜBERNIMMT DARÜBER HINAUS KEINERLEI FREIWILLIGE HAFTUNG.

7. Erlöschen

a. Diese Lizenz und die durch sie eingeräumten Nutzungsrechte erlöschen mit Wirkung für die Zukunft im Falle eines Verstoßes gegen die Lizenzbedingungen durch Sie, ohne dass es dazu der Kenntnis des Lizenzgebers vom Verstoß oder einer weiteren Handlung einer der Vertragsparteien bedarf. Mit natürlichen oder juristischen Personen, die den Schutzgegenstand enthaltende Sammelwerke unter den Bedingungen dieser Lizenz von Ihnen erhalten haben, bestehen nachträglich entstandene Lizenzbeziehungen jedoch solange weiter, wie die genannten Personen sich ihrerseits an sämtliche Lizenzbedingungen halten. Darüber hinaus gelten die Ziffern 1, 2, 5, 6, 7, und 8 auch nach einem Erlöschen dieser Lizenz fort.
b. Vorbehaltlich der oben genannten Bedingungen gilt diese Lizenz unbefristet bis der rechtliche Schutz für den Schutzgegenstand ausläuft. Davon abgesehen behält der Lizenzgeber das Recht, den Schutzgegenstand unter anderen Lizenzbedingungen anzubieten oder die eigene Weitergabe des Schutzgegenstandes jederzeit einzustellen, solange die Ausübung dieses Rechts nicht einer Kündigung oder einem Widerruf dieser Lizenz (oder irgendeiner Weiterlizenzierung, die auf Grundlage dieser Lizenz bereits erfolgt ist bzw. zukünftig noch erfolgen muss) dient und diese Lizenz unter Berücksichtigung der oben zum Erlöschen genannten Bedingungen vollumfänglich wirksam bleibt.

8. Sonstige Bestimmungen

a. Jedes Mal wenn Sie den Schutzgegenstand für sich genommen oder als Teil eines Sammelwerkes verbreiten oder öffentlich zeigen, bietet der Lizenzgeber dem Empfänger eine Lizenz zu den gleichen Bedingungen und im gleichen Umfang an, wie Ihnen in Form dieser Lizenz.
b. Sollte eine Bestimmung dieser Lizenz unwirksam sein, so bleibt davon die Wirksamkeit der Lizenz im Übrigen unberührt.
c. Keine Bestimmung dieser Lizenz soll als abbedungen und kein Verstoß gegen sie als zulässig gelten, solange die von dem Verzicht oder von dem Verstoß betroffene Seite nicht schriftlich zugestimmt hat.
d. Diese Lizenz (zusammen mit in ihr ausdrücklich vorgesehenen Erlaubnissen, Mitteilungen und Zustimmungen, soweit diese tatsächlich vorliegen) stellt die vollständige Vereinbarung zwischen dem Lizenzgeber und Ihnen in Bezug auf den Schutzgegenstand dar. Es bestehen keine Abreden, Vereinbarungen oder Erklärungen in Bezug auf den Schutzgegenstand, die in dieser Lizenz nicht genannt sind. Rechtsgeschäftliche Änderungen des Verhältnisses zwischen dem Lizenzgeber und Ihnen sind nur über Modifikationen dieser Lizenz möglich. Der Lizenzgeber ist an etwaige zusätzliche, einseitig durch Sie übermittelte Bestimmungen nicht gebunden. Diese Lizenz kann nur durch schriftliche Vereinbarung zwischen Ihnen und dem Lizenzgeber modifiziert werden. Derlei Modifikationen wirken ausschließlich zwischen dem Lizenzgeber und Ihnen und wirken sich nicht auf die Dritten gemäß Ziffern 8.a) angeboteten Lizenzen aus.

e. Sofern zwischen Ihnen und dem Lizenzgeber keine anderweitige Vereinbarung getroffen wurde und soweit Wahlfreiheit besteht, findet auf diesen Lizenzvertrag das Recht der Bundesrepublik Deutschland Anwendung.