KWS | ELECTRONIC TEST EQUIPMENT GMBH

AMA.remote

SNMP management software
Manual

KWS | GERMAN ENGINEERING

Contents

Section 1

About this document

This document contains information about the software AMA.remote.

1.1   Revisions

V00.01 November 2010
First release

V00.02 January 2011
Updated to include monitoring

V00.03 June 2011
Updated to include long-term measurement data recording

V00.04 December 2013
Admionistrator mode and user mode added; measuring receiver updated

V00.05 May 2018
Extension of the Channeltable with D-Channels
Extension of the Tuningmemory: Docsis 3.1, Inputsource (Coax, Fibre), Unicable extenstion to 5 Wideband LO's and 8 banks, Jess support

1.2   Reference documents

This manual refers to the following documents:
- AMA310 Antenna Measuring Receiver Operating Manual
- AN001 SNMP Remote Control Application Note

1.3   Contacting the manufacturer

For current information about products from KWS-Electronic, visit our website at **www.kws-electronic.de**. All contact details can also be found there.

Section 2

General

2.1   License terms

The following license terms apply for AMA.remote.

This software includes software from other producers:
- Dart Communications (http://www.dart.com)
- Lu Yixiang (http://www.lyxite.com/)
- Matteo D'Avena (http://www.merchandisingplaza.com)
- mav.northwind (http://www.4voice.de)
- Shine Kumar (http://www.codeproject.com/Members/Shine-Kumar)

The related license provisions for these software products can be viewed on the Internet or requested from the manufacturer. The purchase of this software obligates you to accept these provisions. If you do not accept these provisions, immediately return the unused product to the supplier.

AMA.remote is protected by Directive 2001/29/EC and other copyright laws.

If you have acquired this software on a data medium and do not agree to the provisions mentioned above, return this software.

If you have received this software in electronic form (via the Internet, for example), the following provisions apply:

You must completely delete all components received.

The grantor of the licence has the right to personally ensure the complete deletion of the program components etc. on site at the customer's location.

Upon request from the grantor of the licence, the licence holder is also obligated to submit an affidavit that the program components have been completely deleted.

Section 3

Installation

3.1   Preparation

3.1.1   System requirements

Verify that your PC meets the following requirements:
- Random Access Memory (RAM) of at least 512 MB
- Free hard drive space of at least 1 GB
- Network connection (LAN, WLAN, ...) if applicable
- Windows operating system Windows XP, Windows Vista, Windows 7 or Windows 8

3.1.2   Installation file

When you download AMA.remote or install it from the CD onto your hard drive, you receive the file Setup.msi for installation of the AMA.remote software.

3.2   Installation of AMA.remote

Double-click file Setup.msi to start the installation assistant for installation of the AMA.remote software. Follow the instructions and end the installation with "Close".

A link to the program is automatically created on the desktop and in the Quick Start Toolbar.

3.3   Further installation information

3.3.1   Files in the program directory

Program file AMAremote.exe, several library files and the operating manual are located in the program directory (C:\Program Files\AMAremote, for example).

3.3.2   Files in the application directory

The application directory ..\AMA.remote\<Version number>\ contains both the initialization file "amaremote.ini" and the file "user.xml", which contains information about the valid user. Furthermore, this is the standard directory for saving the monitoring log file (see section "The monitoring application area").

3.3.3   Uninstallation

The AMA.remote software can be completely deleted from the PC using the Quick Launch Toolbar by choosing Control Panel -> Software -> Remove AMAremote.

Section 4

Introduction to AMA.remote

4.1   *Start program*

You have the option to log in to AMA.remote either as an administrator or as a user. In administrator mode, you can add measuring devices to the list of SNMP agents, make changes to the administrator login data and manage user accounts. In user mode, you can only access measuring receivers through IP addresses that have already been created. You don't need to have any knowledge of network conditions in this mode.
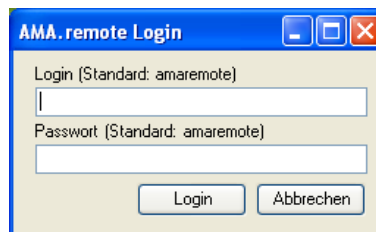
If you don't need different access authorizations and thereby don't need different login modes, you can keep the standard settings for the login name and password. You can find more information about the administrator and user settings in the sections "Edit administrator settings" and "Edit user settings".

4.2   *The application areas*

The AMA.remote software can edit files used by the measuring receiver. Under certain conditions, it is also possible to operate the measuring receiver remotely.

The files to be edited are tuning memory files (MEM files), channel tables (CHA files) and DataLogger files (XML files).

A tuning memory assignment of a measuring receiver is written to a tuning memory file. Every memory location can be called up in the measuring instrument, and the instrument tunes itself according to the information in the memory location. The tuning memory assignment can be easily set or changed by importing a tuning memory file into the measuring receiver. A tuning memory file can also be exported from the measuring receiver and saved or imported into another instrument. Using AMA.remote, it is possible to import and change existing tuning memory files or to create new files. The corresponding tool is called "Tuning memory".
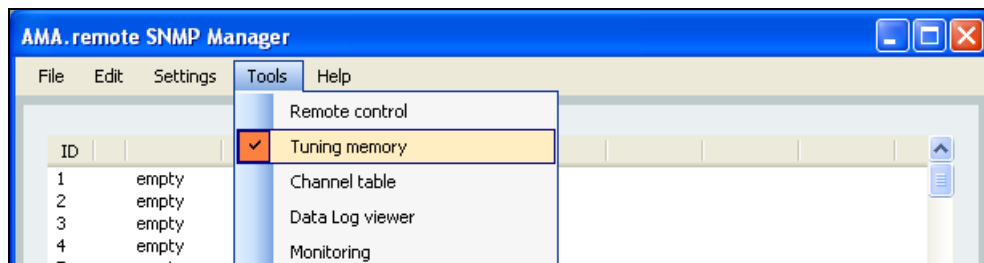
Channel tables for the various television standards are already stored in the measuring receiver. They contain information about the channel spacing, i.e. the channel frequencies and bandwidths. For cases in which a system differs from the standard in its channel assignment, it is possible to load your own channel table into the measuring instrument by using a CHA file. Such a channel table file is created in AMA.remote in the "Channel table" application area.
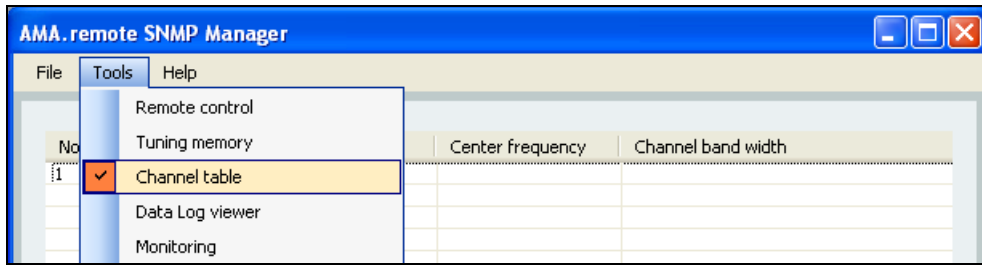
Measurements can be recorded using the DataLogger function of the measuring receiver. The measurement data is stored in XML files. AMA.remote can import, display and output these DataLogger files. When several DataLogger files are opened at the same time, the contents of the files are summarised in a table. The tool for editing DataLogger files is called "Data Log Viewer".
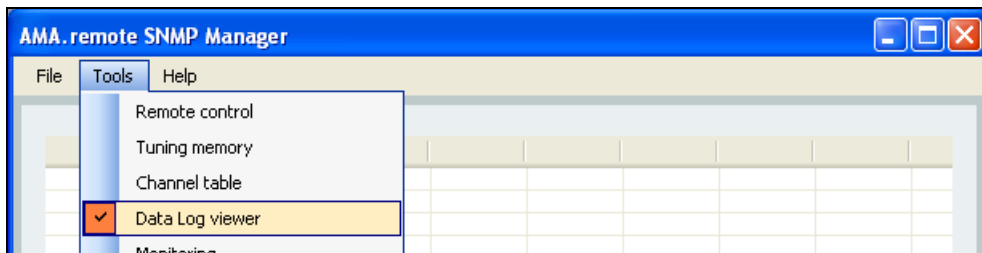
The "Remote control" tool is used to operate a measuring receiver from a PC using AMA.remote. The settings necessary for tuning a measuring receiver can be made here. All measured values and parameters that are displayed on the LCD of the measuring receiver are also displayed here.
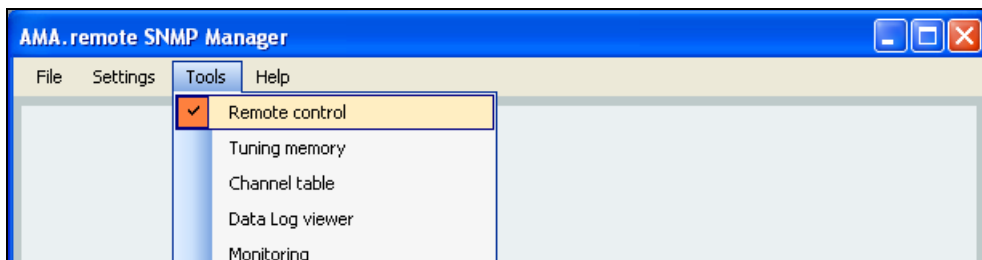
Similar to the measuring instrument's monitoring function, AMA.remote allows you to use the "Monitoring" tool to monitor a channel or a frequency. First, the measuring receiver is tuned and, then, configured for monitoring. If the measured value exceeds a specified limit, a message will appear to indicate such.
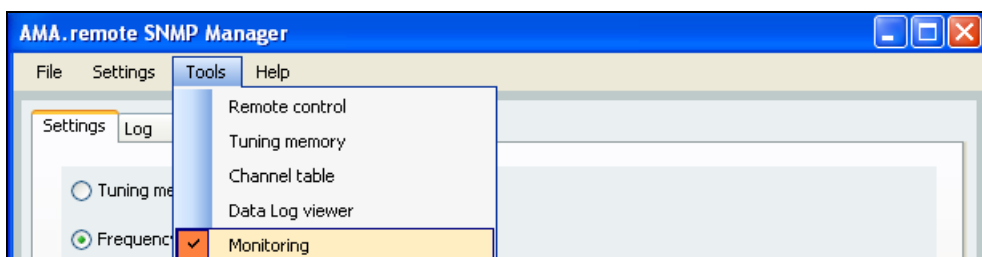
The "Long-term measurement" data recording tool is available for showing a graphical display and recording measured values for up to five channels or frequencies. The desired measurements are specified by entering the tuning memory location. The measured values are then retrieved at a given interval, displayed in diagrams and stored.
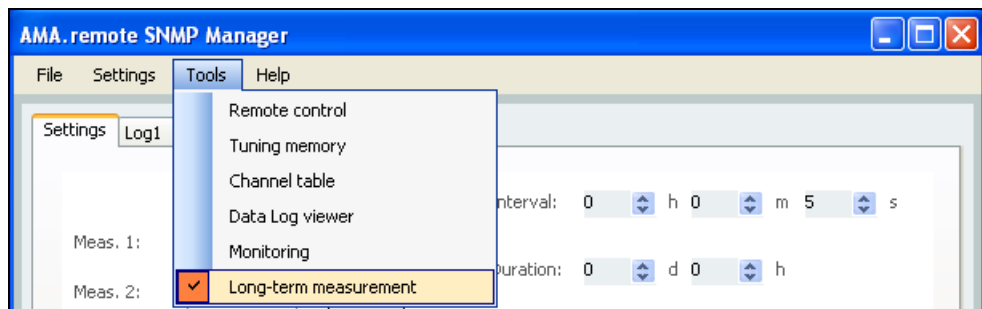
4.3 The menu bar

The menu bar changes depending on the selected tool according to the requirements of the respective application area. The menu items "Help", "Print" and "Exit" will be addressed here, and all other menu items will be discussed in detail in the following sections describing the application areas.

4.4 Help

The submenu item "Info", with information about the program, is located under the menu item "Help". The window "Info about AMA.remote" contains the current version number of the software, among other information, and can be closed with "OK".
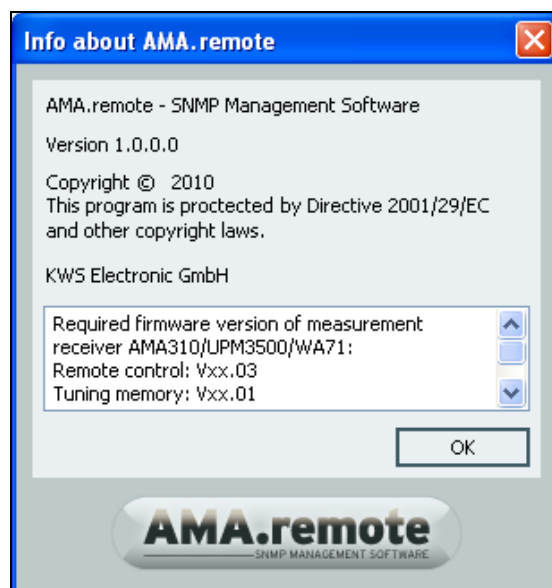
4.5 Print

4.5.1 Page Setup

Under "Page Setup", parameters such as the page format (portrait or landscape format) and the width of the margins can be changed. The "Page Setup" window is opened for this. The table view within the application is not changed by the settings, but they influence the print output.
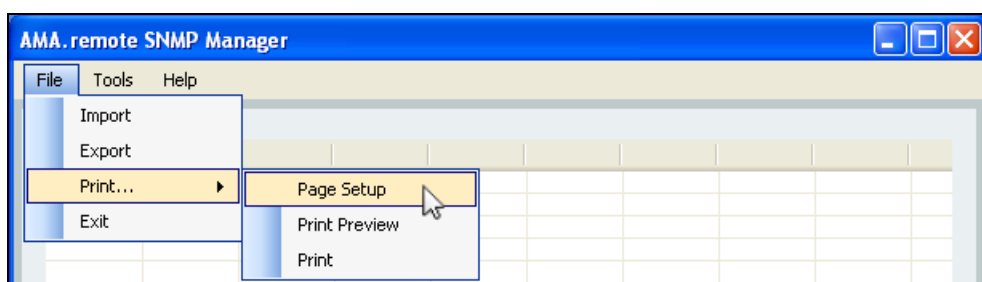
4.5.2 Print Preview

The print preview provides information about the number of pages to be printed and how the page contents will be displayed. The "Print Preview" window opens. If the printer symbol is clicked in this window, a print job is sent to the standard printer without any further confirmation. It is also possible to change the zoom level and the number of pages displayed. This allows the effects of a change (the column width of a table, for example) to be checked on the printout.
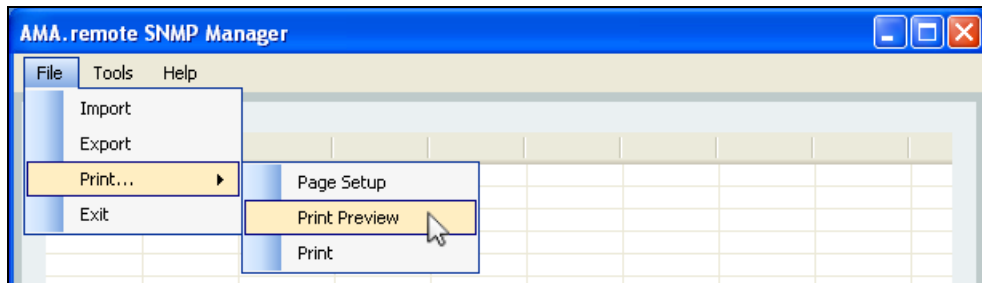
4.5.3 Print

The submenu item "Print" opens the "Print" window. The desired printer and the number of copies to be printed can be set there.
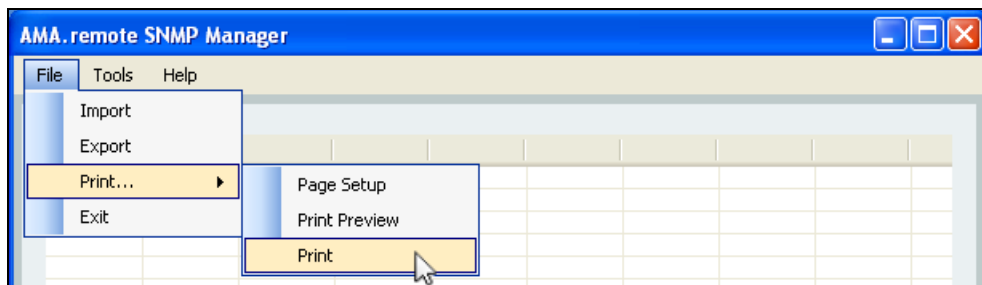
4.6 Status bar

On the bottom edge on the program window, a status bar is displayed that shows the runtime of the program in seconds. Depending on the window selected, the current status of the remote control and the currently loaded user channel table are also listed, for example.
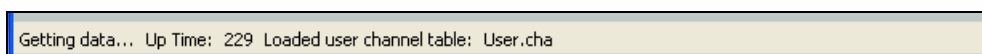
4.7 Logo

Clicking on the logo causes the publisher's homepage to be called up in the default browser.

If the browser is set so that it always starts on a certain page, it may be necessary to click the logo a second time after the browser starts.

4.8 Exit

The menu item "Exit" exits the program.
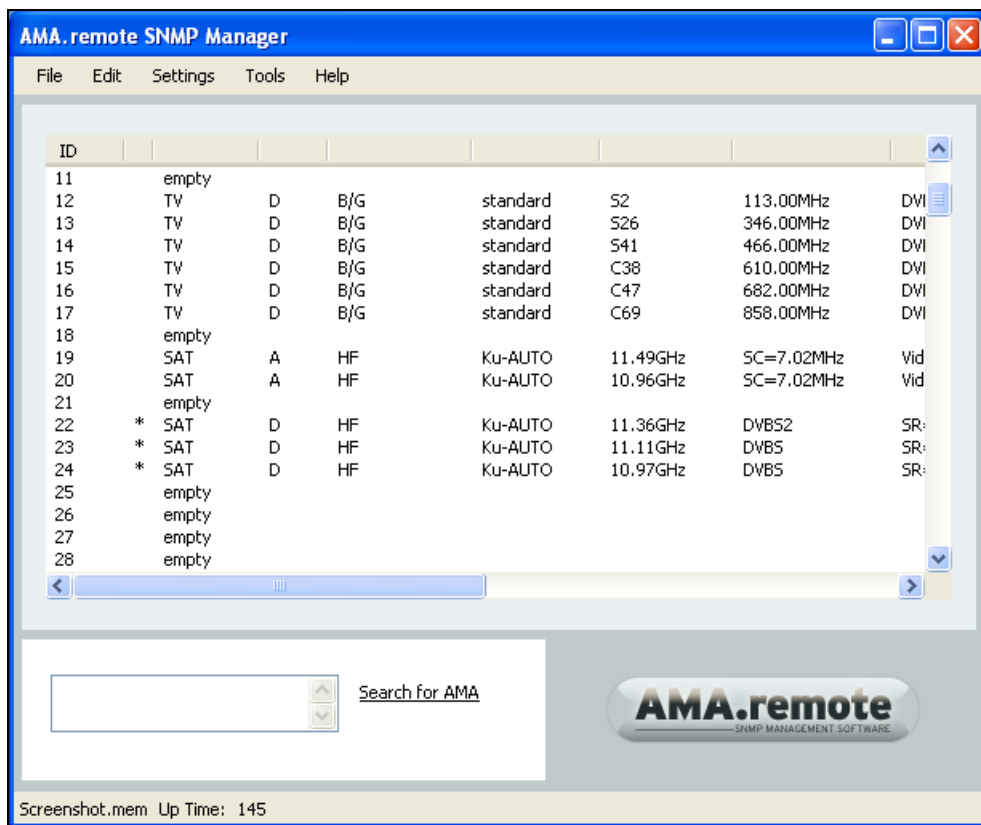
Section 5

The tuning memory application area

5.1   Display

If the "Tuning memory" tool is activated, the corresponding application area is displayed in the program window. The tuning memory of the measuring receiver contains 200 memory locations. Accordingly, a table with 200 rows is displayed. Each row corresponds to a tuning memory location and is numbered in the first column.

The cell contents of a row correspond to the information that is contained in a tuning memory location. The second column displays whether a memory location is protected (in accordance with the display in the measuring receiver). The third column displays whether a memory location is empty or the range in which the saved program is located. The content of all other cells of a row varies according to the specification in the previous row.

5.2   General procedure

Clicking a table cell opens a text box or a dropdown menu. Since the information in a cell usually has an influence on the cells following it, the entries are made from left to right. If all possible settings for a tuning memory location have been made, no more cells can be selected.

5.2.1   Tab

The Tab key can be used to jump from one cell to the next. At the end of a row, the program will automatically jump to the next row.

5.2.2   Erasing a memory location

The content of a row or a memory location can be deleted by selecting "empty" in the third column.

5.2.3   Moving row(s)

Individual rows or several rows can be moved. To do this, the memory location number area of the selected area must be left-clicked.

The selected area is then moved to the desired location with the mouse button held down. During the process, a line appears that shows the table insertion position that is currently possible.

After the left mouse button is released, the selected area is inserted where the line is located.

5.3   File

The "File" dropdown menu is located on the far left of the menu bar.

5.3.1 New tuning memory

Clicking "New" causes the current table to be deleted and a new, empty tuning memory list to be displayed.

5.3.2 Importing a tuning memory file

The "Import" menu item activates the "Open" window and allows you to import a tuning memory file. For example, such a file can be exported from the measuring receiver onto a USB stick and selected here. A tuning memory file has the file extension ".mem", and you confirm the selection of such a file by clicking "Open". The content of the imported tuning memory file is displayed in table form.

5.3.3 Exporting a tuning memory file

When exporting the current table into a tuning memory file, the table content is first checked for validity automatically (see also the "Checking tuning memory entries" section), and then the "Save as" window opens. The save location is selected here and a file name is assigned. You complete the process by clicking "Save". A tuning memory file exported in this way can be imported into the measuring receiver using a USB stick.

5.3.4 Printing a tuning memory file

See the "Print" section.

5.4 Edit

The "Edit" dropdown menu can be activated using the menu bar. "Edit" actions relate to the entire tuning memory.
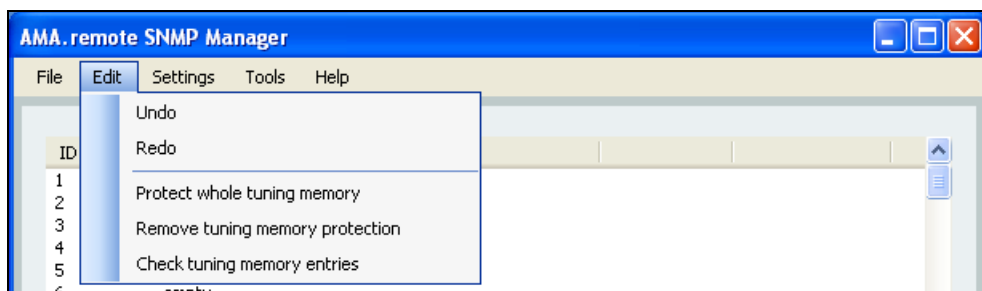
5.4.1 Undo

The "Undo" action corresponds to the same action in the context menu.

5.4.2 Redo

The "Redo" action corresponds to the same action in the context menu.

5.4.3 Protect whole tuning memory

This protects the entire tuning memory. Every assigned tuning memory location is marked with an asterisk ("*"). Empty memory locations cannot be protected.

5.4.4 Remove tuning memory protection

The memory protection of all protected tuning memory locations is removed with this action.

5.4.5   Check tuning memory entries

"Check tuning memory entries" can be used to check whether the information is complete.

If individual entries or several entries are missing, a corresponding message is displayed. The first row in which entries are missing is displayed in the message.
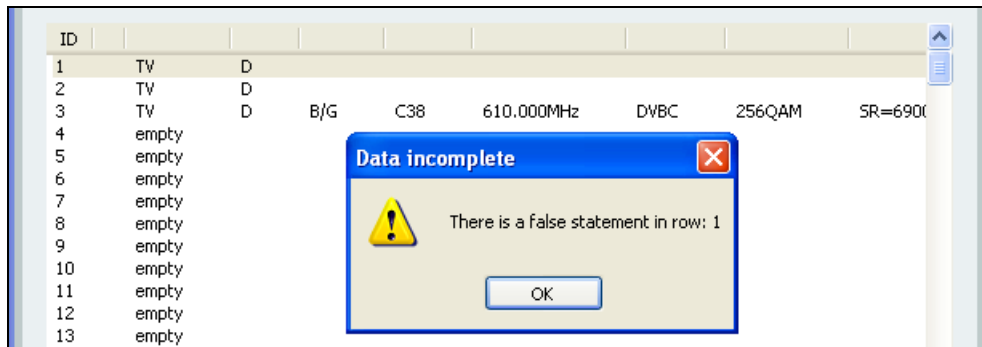
As soon as information necessary for successful tuning of the measuring instrument is available for all tuning memory locations, a message appears indicating that the information is correct.
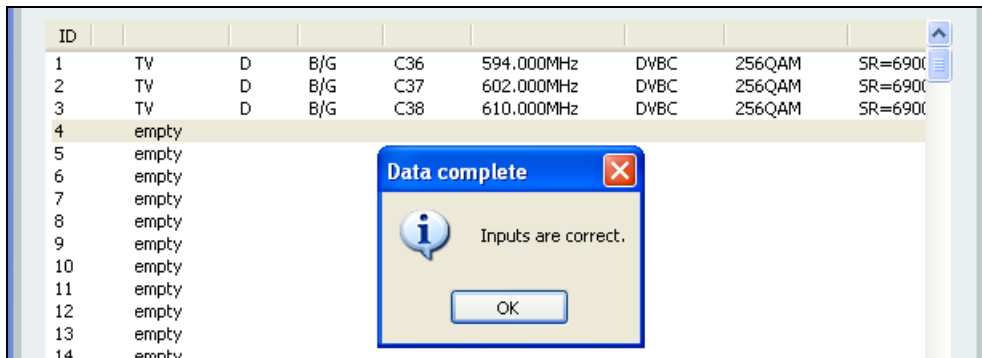
5.5   Settings

Channel tables for the various television standards are stored in the measuring receiver, and this corresponds to the standard setting. It is possible to load a user channel table, the use of which is taken into considerations when saving a frequency in the tuning memory. In order to create the same conditions as on the measuring receiver, the user channel table that is used in the measuring receiver can also be loaded into AMA.remote.
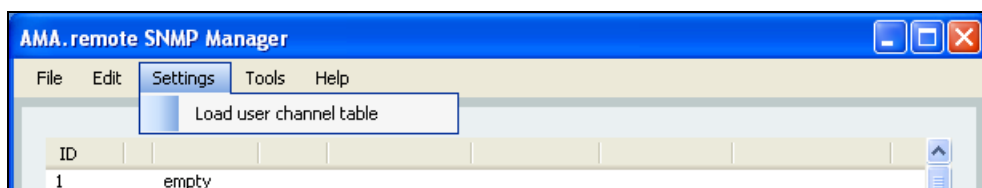
The file name of the currently loaded user table appears in the status bar on the bottom edge of the AMA.remote window.
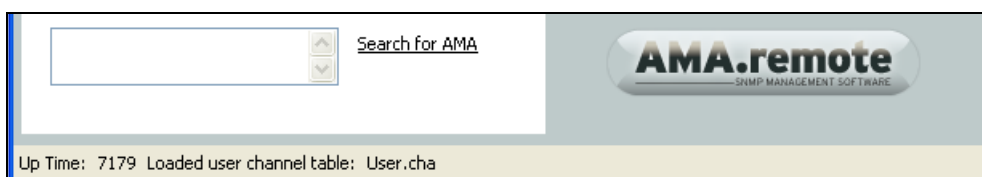
During the entry of the settings for a tuning memory location, the selection "standard" appears for the stored channel tables, and the selection "user" appears for the currently loaded user channel table.

5.6   Context menu

Using the context menu, individual rows or several rows can be edited. An individual row is selected by clicking the first or second column.

Several rows can be selected by dragging the cursor while holding down the left mouse button.

You can also select several rows by clicking the first row of the desired area, holding down the shift key and then selecting the last row of the desired area.

Right-clicking in the selected area opens the context menu.

5.6.1   Undo

The "Undo" action resets the table to the previous state. For example, if the information in a row for the TV area was mistakenly deleted through a change of the range to SAT, this can be undone. Up to five consecutive "Undo" actions are possible.

5.6.2   Redo

"Redo" allows an action that was just undone to be redone. Up to five "Redo" actions are possible if five actions were previously undone.

5.6.3   Copy row(s)

It is possible to copy individual rows or several rows. All selected rows are copied.
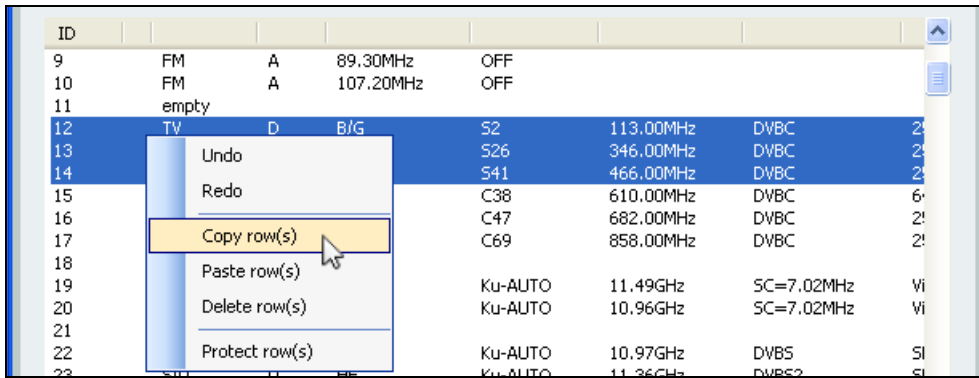
5.6.4   Paste row(s)

To paste an individual copied row or several copied rows, right-click the line where the copy should be pasted. The existing rows are overwritten in the process.
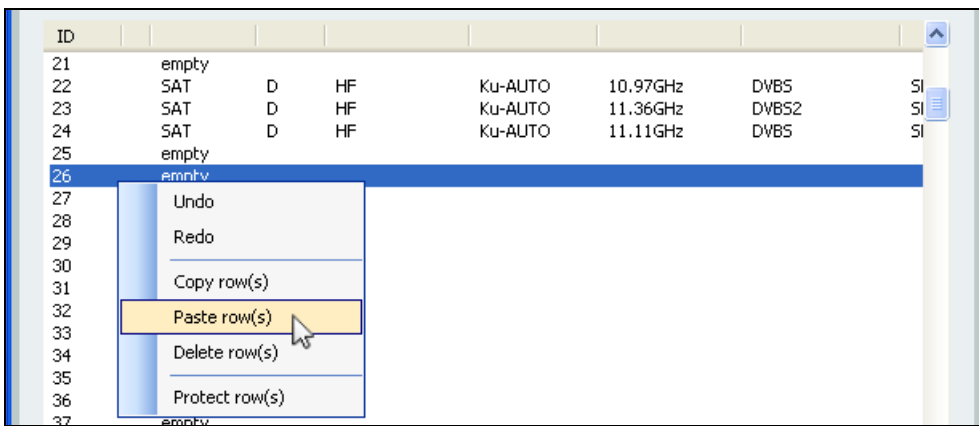
To avoid inadvertent pasting of rows into the wrong location, a prompt appears that must be confirmed with OK if the paste was intentional.
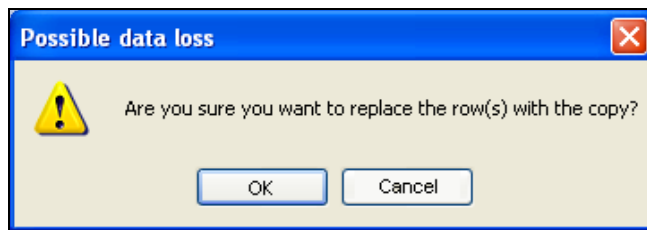
5.6.5   Delete row(s)

As already mentioned, the content of a row or a memory location can be deleted by selecting "empty" in the third column. Another option for deleting a memory range is the "Delete row(s)" action in the context menu. This is used primarily for deleting several memory locations at the same time.

5.6.6   Protect row(s)

"Protect row(s)" can be used to protect individual or several tuning memory locations. The corresponding row(s) are marked in the second column with an asterisk ("*"). This ensures that a memory location can only be changed in the measuring instrument if the memory protection is first disabled. If individual or several tuning memory locations are already protected, a checkmark appears in the context menu. Clicking on it causes the memory protection in the selected area to be disabled. Empty memory locations cannot be protected.

Section 6

The channel table application area

6.1   *Display*

If the "Channel table" tool is activated, the corresponding application area is displayed in the program window. The channel table must provide information to the measuring receiver about the channel name, the center frequency, the picture carrier frequency and the channel bandwidth for every channel. Accordingly, a table with five columns is shown for a row number and this information.

The number of rows varies according to the number of channels, but it is not possible to have empty rows. The table is also filled from the top to the bottom. It is not possible to edit an additional row until the information for a row is complete.
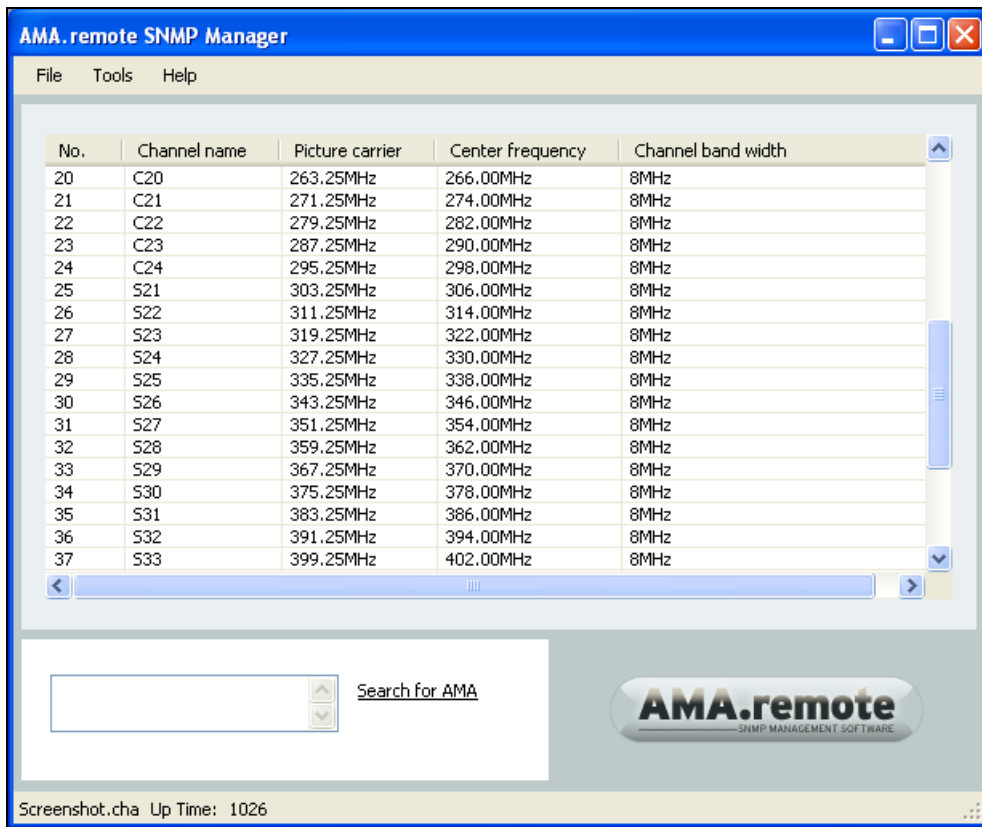
6.2   *General procedure*

Clicking a table cell allows a row to be edited. Keyboard entries are ended using the "Enter" or "Return" key.

Another option is to fill in the cells from left to right using the Tab key. The information is automatically applied when the Tab key is pressed, and the cursor moves to the next cell.
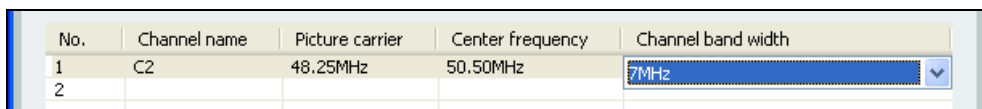
If an entry in the cell for the channel bandwidth is confirmed with the Tab key, the next row is automatically filled in, taking into account the information in the current row.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2	48.25MHz	50.50MHz	7MHz
2	C3	55.25MHz	57.50MHz	7MHz
3				

The channel number is increased by one, the channel bandwidth is added to the center frequency and the picture carrier frequency, and the channel bandwidth can be changed for the following row or confirmed with the Tab key.

If the prepopulated content for the cell is often wrong, we recommend that the content of the channel bandwidth cell be confirmed with the "Enter" or "Return" key and that the entries for the following row be made on a cell-by-cell basis.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2	48.25MHz	50.50MHz	7MHz
2	C3	55.25MHz	57.50MHz	7MHz
3	C			

6.2.1   Channel name

The channel name consists of the prefix "C", "S" or "D" and a number. Other letters, special symbols or spaces are not allowed. D channels should use an integer center frequency in MHz of the corresponding channel.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2			

Within the channel table, C, S and D channels can alternate in any fashion. Each channel name can only be used once.

6.2.2   Center frequency

The permitted frequency range for the center frequency corresponds to that of the measuring receiver. If no unit is specified, the MHz unit is automatically added.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2	48.25MHz	50.50MHz	

The center frequency of a channel always needs to be higher than the previous channel. The channels are also not allowed to overlap in regard to the channel bandwidth. That means that there must be sufficient distance between a given center frequency and the previous center frequency.

6.2.3   Picture carrier frequency

The permitted frequency range for the picture carrier frequency corresponds to that of the measuring receiver. If no unit is specified, the MHz unit is automatically added.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2	48.25MHz		
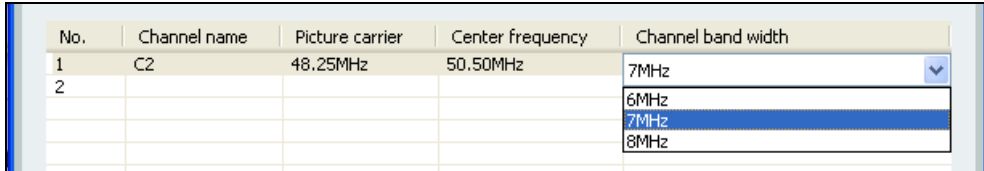
Like the center frequency, the picture carrier frequency of a channel always needs to be higher than the previous channel. The channels are also not allowed to overlap in regard to the channel bandwidth. That means that there must be sufficient spacing between a given picture carrier frequency and the previous picture carrier frequency.

D channels: The picture carrier frequency corresponds to PLC frequency in Docsis 3.1 systems. In other operating modes it has no specific meaning.

6.2.4   *Channel bandwidth*

You can select 6MHz, 7MHz or 8MHz for the channel bandwidth. At D-channels bandwidth from 24MHz to 192MHz for Docsis 3.1 systems are also possible.
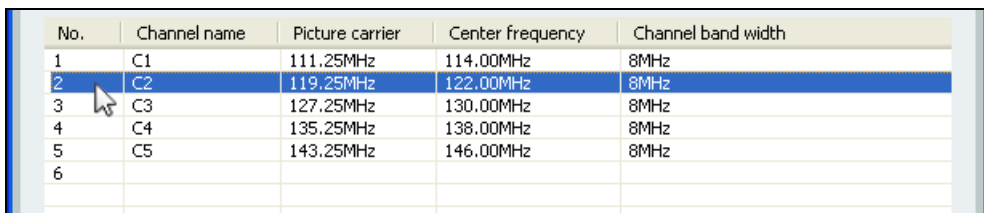
No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C2	48.25MHz	50.50MHz	7MHz
2				6MHz
				7MHz
				8MHz

The difference between the center frequency and the picture carrier frequency must be smaller than the channel bandwidth, of course.
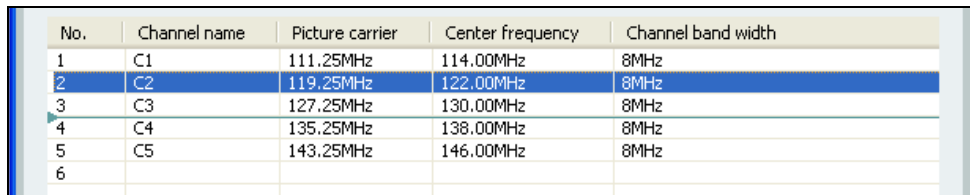
6.2.5   *Moving row(s)*

Individual rows or several rows can be moved. To do this, the row number area of the selected area must be left-clicked.
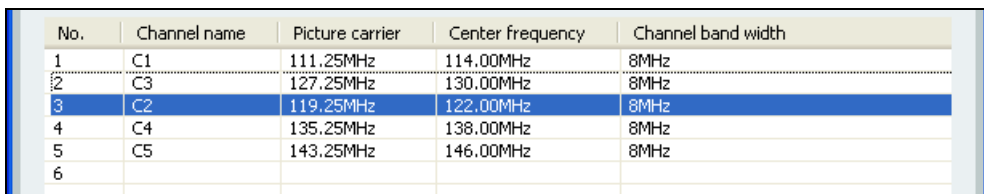
No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C1	111.25MHz	114.00MHz	8MHz
2	C2	119.25MHz	122.00MHz	8MHz
3	C3	127.25MHz	130.00MHz	8MHz
4	C4	135.25MHz	138.00MHz	8MHz
5	C5	143.25MHz	146.00MHz	8MHz
6				

The selected area is then moved to the desired location with the mouse button held down. During the process, a line appears that shows the table insertion position that is currently possible.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C1	111.25MHz	114.00MHz	8MHz
2	C2	119.25MHz	122.00MHz	8MHz
3	C3	127.25MHz	130.00MHz	8MHz
4	C4	135.25MHz	138.00MHz	8MHz
5	C5	143.25MHz	146.00MHz	8MHz
6				

After the left mouse button is released, the selected area is inserted where the line is located.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C1	111.25MHz	114.00MHz	8MHz
2	C3	127.25MHz	130.00MHz	8MHz
3	C2	119.25MHz	122.00MHz	8MHz
4	C4	135.25MHz	138.00MHz	8MHz
5	C5	143.25MHz	146.00MHz	8MHz
6				

Note that the frequencies within the channel table must increase from channel to channel. After rows have been moved, the frequencies usually must be adjusted accordingly.

6.3   *File*

The "File" dropdown menu is located on the far left of the menu bar.
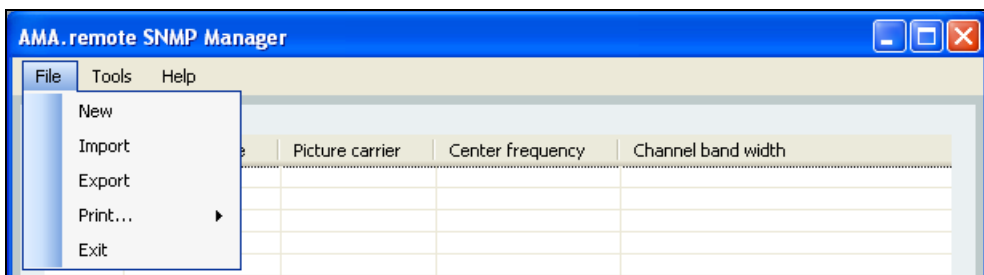
6.3.1 New channel table

Clicking "New" causes the current table to be deleted and a new, empty channel table to be displayed.

6.3.2   Importing a user channel table file

The "Import" menu item activates the "Open" window and allows you to import a user channel table file. For example, such a file can be created at an earlier point in time and selected here. A channel table file has the file extension ".cha", and you confirm the selection of such a file by clicking "Open". The content of the imported channel table file is displayed in table form.

6.3.3   Exporting a user channel table file

When exporting the current table into a user channel table file, the table content is first checked for validity automatically, and then the "Save as" window opens. The save location is selected here and a file name is assigned. You complete the process by clicking "Save". A channel table file exported in this way can be loaded into the measuring receiver using a USB stick.

6.3.4   Printing a user channel table

See the "Print" section.

6.4   Context menu

Using the context menu, individual rows or several rows can be edited. An individual row is selected by clicking the first column.

Several rows can be selected by dragging the mouse while holding down the left mouse button.

You can also select several rows by clicking the first row of the desired area, holding down the shift key and then selecting the last row of the desired area.

Right-clicking in the selected area opens the context menu.

6.4.1   Undo

The "Undo" action resets the table to the previous state. Up to five consecutive "Undo" actions are possible.

6.4.2   Redo

"Redo" allows an action that was just undone to be redone. Up to five "Redo" actions are possible if five actions were previously undone.

6.4.3 Copy row(s)
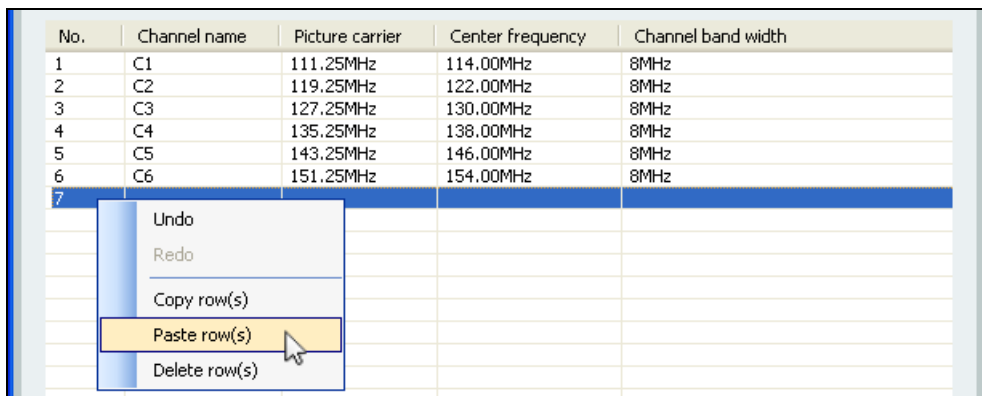
It is possible to copy individual rows or several rows. All selected rows are copied.

6.4.4 Paste row(s)

To paste an individual copied row or several copied rows, right-click the line where the copy is to be pasted. The existing rows are overwritten in the process.

To avoid inadvertent pasting of rows into the wrong location, a prompt appears that must be confirmed with OK if the paste was intentional.
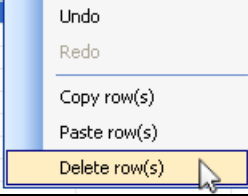
Note that each channel name can only be used once. After a copy is made, the channel name must be changed as well. Also note that the frequencies within the channel table must increase from channel to channel.

6.4.5 Delete row(s)

Individual channels or several channels can be deleted by selecting "Delete row(s)" from the context menu. If there are any channels that follow, they are automatically moved up within the table.

No.	Channel name	Picture carrier	Center frequency	Channel band width
1	C1	111.25MHz	114.00MHz	8MHz
2	C2	119.25MHz	122.00MHz	8MHz
3	C3	127.25MHz	130.00MHz	8MHz
4	C4		38.00MHz	8MHz
5	C5		46.00MHz	8MHz
6				

Undo

Redo

Copy row(s)

Paste row(s)

Delete row(s)

Section 7

The Data Log Viewer application area

7.1   Display

When using the "Data Log Viewer" tool, the corresponding application area is displayed in the program window. DataLogger files are created by the measuring receiver using its DataLogger function. These are measurement data files with the file extension ".xml". These files can generally be opened and edited with a spreadsheet program that supports editing of XML files. The Data Log Viewer in AMA.remote allows easy merging of several files like those that are usually created when there are several measurements for a project.
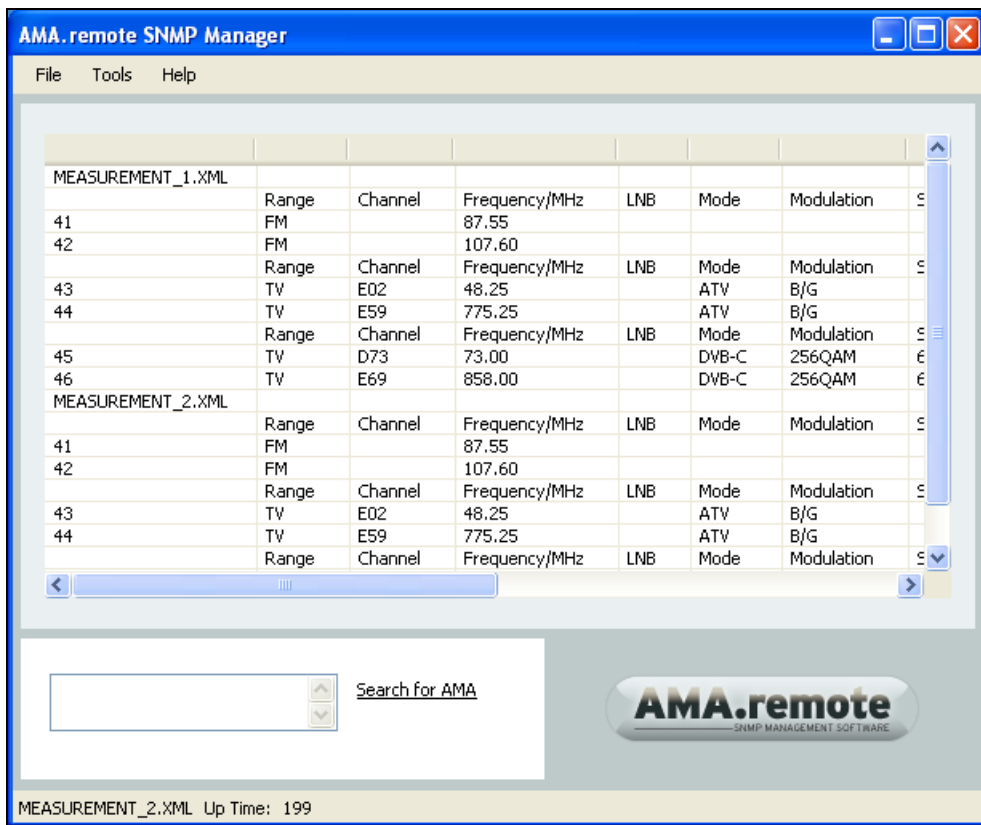
7.2   General procedure

The Data Log Viewer tool functions only as a viewer. Individual or several DataLogger files can be displayed in a table but cannot be edited. It is possible to export the displayed data into an XML file (see the "Exporting a DataLogger file" section) or printing the displayed data (see the "Print" section).

As already mentioned, DataLogger files can generally be opened and edited with a spreadsheet program that supports the editing of XML files.

	A	B	C	D	E	F	G	H
1		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate
2	41	FM		87.55				
3	42	FM		107.60				
4		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate
5	43	TV	E02	48.25		ATV	B/G	
6	44	TV	E59	775.25		ATV	B/G	
7		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate
8	45	TV	D73	73.00		DVB-C	256QAM	690
9	46	TV	E69	858.00		DVB-C	256QAM	690
10								
11								

The display of a DataLogger file with AMA.remote is distinguished by the specification of the file names above the measured values.

	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Syml
MEASUREMENT_1.XML							
41	FM		87.55				
42	FM		107.60				
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Syml
43	TV	E02	48.25		ATV	B/G	
44	TV	E59	775.25		ATV	B/G	
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Syml
45	TV	D73	73.00		DVB-C	256QAM	6900
46	TV	E69	858.00		DVB-C	256QAM	6900

When several DataLogger files are merged, the name of the respective file appears above the corresponding measurement data.

	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	S
MEASUREMENT_1.XML							
41	FM		87.55				
42	FM		107.60				
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	S
43	TV	E02	48.25		ATV	B/G	
44	TV	E59	775.25		ATV	B/G	
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	S
45	TV	D73	73.00		DVB-C	256QAM	6
46	TV	E69	858.00		DVB-C	256QAM	6
MEASUREMENT_2.XML							
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	S
41	FM		87.55				
42	FM		107.60				
	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	S

When exporting this table, the program automatically inserts the file names into the XML file above the block of measurements. The file names thus also appear when the file is displayed using an appropriate spreadsheet program.

	A	B	C	D	E	F	G	H	I	J
1								MEASUREMENT_1.XML		
2										
3		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate	Rec.Modif.	Level/
4	41	FM		87.55						
5	42	FM		107.60						
6		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate	Rec.Modif.	Level/
7	43	TV	E02	48.25		ATV	B/G			
8	44	TV	E59	775.25		ATV	B/G			
9		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate	Rec.Modif.	Level/
10	45	TV	D73	73.00		DVB-C	256QAM	6900		
11	46	TV	E69	858.00		DVB-C	256QAM	6900		
12										
13										
14										
15										
16								MEASUREMENT_2.XML		
17										
18		Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbolrate	Rec.Modif.	Level/
19	41	FM		87.55						
20	42	FM		107.60						

7.3   File

The "File" dropdown menu is located on the far left of the menu bar.
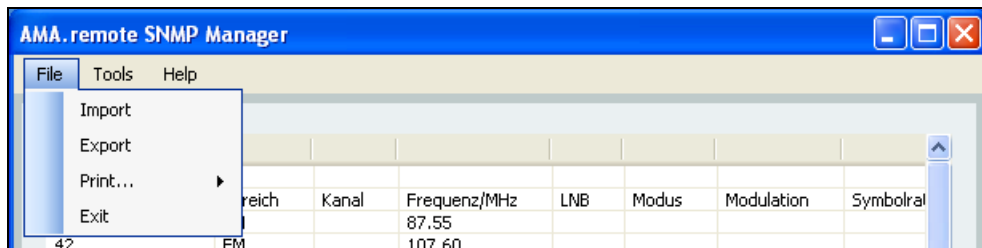
7.3.1   Importing a DataLogger file

The "Import" menu item activates the "Open" window and allows you to import individual or several DataLogger files. These files can be saved from the measuring receiver onto a USB stick and selected here. A DataLogger file has the file extension ".xml", and you confirm the selection of the corresponding files by clicking "Open". The content of the imported DataLogger file(s) is displayed in table form.

In order to merge several files, several XML files are selected together during import. The files are selected here in the "Open" window by pressing the control or switching button and clicking the desired file names. As soon as more than one file is selected and "Open" has been activated, the files are summarised in a table and can be exported in this form.

7.3.2   Exporting a DataLogger file

When exporting the current table into a DataLogger file, the "Save as" window is opened. The save location is selected here and a file name is assigned. You complete the process by clicking "Save". A DataLogger file saved in this way can also be opened and edited with a spreadsheet program that supports editing of XML files.

7.3.3   Printing a DataLogger file

See the "Print" section.

Section 8

Establishing a connection

8.1 Connecting the measuring receiver to AMA.remote

In order to operate and monitor a measuring receiver remotely, you must have the SNMP interface activated in AMA 310. This can be done by obtaining a license for the use of the full range of functions of "AMA.remote." More information is available from the manufacturer and in the operating manual of the measuring receiver.

For remote control, monitoring or measurement data recording of a measuring receiver from a PC with the AMA.remote software, a connection first must be established between the measuring receiver and PC. It does not matter at this stage whether the PC and measuring receiver are connected to each other within a company network or whether each of them are connected to the Internet. The basic connection between the measuring receiver and PC is shown in the following figure.
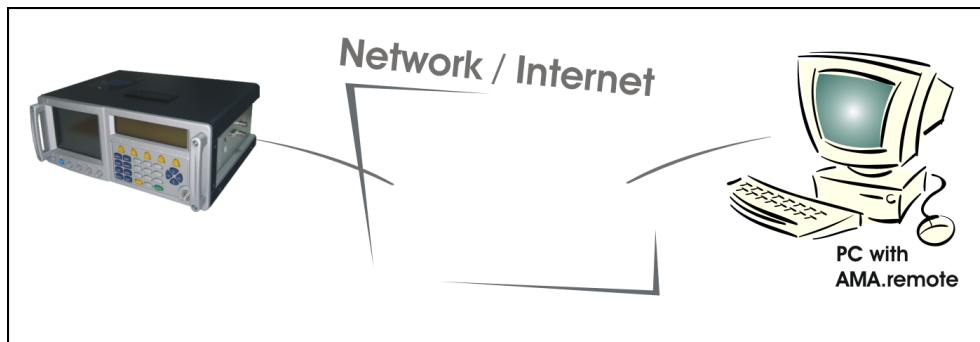
In order to connect the measuring receiver with a network, the measuring receiver is equipped with a standard 10Base-T Ethernet interface with a maximum transfer rate of 10 Mbit/s. The RJ-45 socket used for this purpose is located on the right side of the instrument.

Depending on the existing network structure, various information and procedures are necessary for establishing a connection between the measuring receiver and the PC. Due the great variety of possibilities, the manufacturer cannot provide explicit instructions or information in this regard, but the important differences are briefly explained below.

NOTE!   The manufacturer cannot offer any support for establishing a network connection between the measuring receiver and PC.

For setting up a connection between the measuring receiver and a PC, knowledge about the existing network or networks is absolutely necessary. For example, a free IP address that can be assigned to the measuring receiver must be available.

8.2 Connecting AMA.remote with the network or Internet

8.2.1 Connecting within a network

One possible application for the remote control of a measuring receiver is within a network with PCs or servers and head ends. AMA.remote software runs on one or more PCs in this network. For example, measurements are to be taken at a head end, and a measuring receiver may be connected with the network via the head end for this purpose.

It is possible that the network is divided into subnetworks and that it contains several gateways. For this reason, the subnet mask and the standard gateway can be entered in the measuring receiver in addition to the IP address.
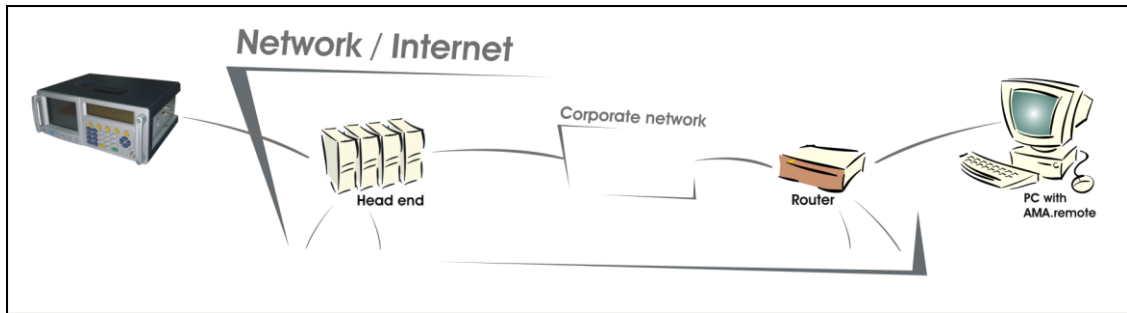
8.2.2 Connecting via VPN

In addition to the option to connect the measuring receiver and PC within the same network, it is also possible to connect the two over the Internet. The network in which the measuring receiver is located and the network in which the PC is located are each connected to the Internet through a router. The respective network may consist only of a modem with router function and the measuring receiver or PC.

One possible application is remote control of a measuring receiver at a measuring point from a PC in a company network.

In order to avoid unwanted access to a component from the Internet within a network, a variety of mechanisms exist (firewalls, for example). There are two ways to ensure that the AMA.remote software can nevertheless access a measuring receiver on a router via the Internet.

One option is to set the firewalls and other parameters on the associated network components so that the connection is allowed and possible. For example, the ports for an SNMP connection (UDP ports 161 and 162) must be enabled. We do not provide further explanation for this option here.

Another option consists of configuring a Virtual Private Network (VPN). With this option, the network components of another network appear to be part of your own private network. When establishing a VPN connection, a tunnel through the Internet is defined between two routers, and the transmitted data is encrypted.
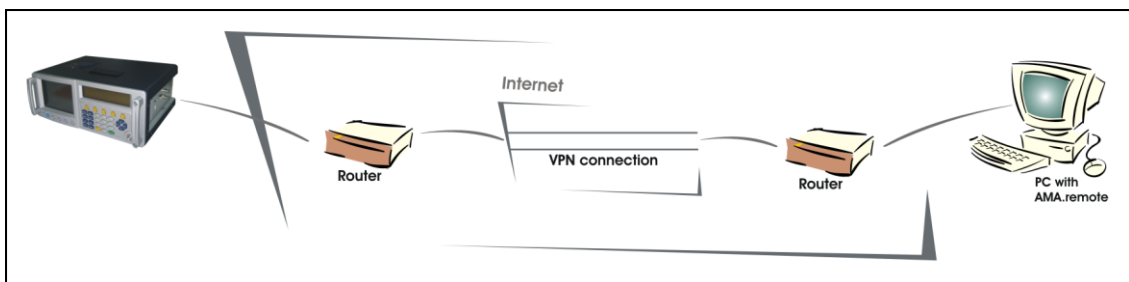
The software that establishes the VPN connection needs to know and use the globally valid IP addresses of the connection participant. This aspect is explained in more detail below.

The measuring receiver itself is not VPN-capable. The router must take over this function on the connection side of the measuring instrument. It is usually sufficient to set up this router in this manner once using a PC. For operation of the measuring instrument on this router, a PC is no longer needed.

On the PC with AMA.remote side, the operating system's own VPN program can be used for establishing the connection, for example. The router to which the PC is connected needs to allow this VPN connection, however. In a company network, it may be necessary to contact the network administrator.

There are also VPN-capable routers that support establishing a connection to another router of the same manufacturer. If the router to which the measuring receiver is connected and the router to which the PC is connected are from the same manufacturer, it may be possible to use a program from this router manufacturer to easily set up a VPN connection.

8.3   Connecting the measuring receiver with the network or Internet

In order to establish a connection between two components via the Internet, both components must be uniquely addressable. Otherwise, it cannot be ensured that data can be exchanged between the two components.

The IP address of a network component is usually only valid within what is referred to as the private network. The components of a network, including their IP addresses, are generally hidden from the Internet. If data is sent over the Internet, the router replaces the IP addresses of the sending network component with its own IP address. The IP address of the router is not reachable from the Internet, and when the router receives data from the Internet, it replaces its own IP address with the IP address of the network component that is to receive the data.

You must ensure that a router is part of a network. Depending on the Internet provider, a router has what is known as a public or private IP address. A public IP address is globally unique. But there are also Internet providers that assign private IP addresses to their routers and convert these addresses for the Internet in an additional router. A VPN connection cannot usually be established to a router with a private IP address, since it is not uniquely addressable. An exception to this rule is a connection between VPN-capable routers of the same manufacturer.

For connection via the Internet between a measuring receiver and a PC with AMA.remote software, knowledge of the respective router addressing is therefore absolutely necessary. In the following, the assumption is made that the PC with AMA.remote software has an Internet connection. As a mobile device, the measuring receiver can connect to the Internet via a VPN-capable router either using a mobile Internet connection or through a cable or DSL modem.

The option that is most suitable depends on the actual situation.

8.3.1   Mobile Internet connection

A universal Internet connection is a connection through one of the mobile standards GSM, UMTS or LTE. The measuring receiver is connected to a VPN-capable router using an Ethernet cable. For example, for this router it is possible to connect to the Internet using a USB stick for mobile Internet (GSM, UMTS or LTE). This USB stick usually contains a SIM card from a suitable provider.

The advantage of a mobile Internet connection is that an Internet connection that is set up once can be established from anywhere (assuming there is network coverage). Depending on the rate plan that is chosen, it may be necessary to explicitly start the mobile Internet connection when establishing the connection for the measuring receiver. Otherwise, it is not necessary to have a cable or DSL connection, for example, since data is transmitted wirelessly.
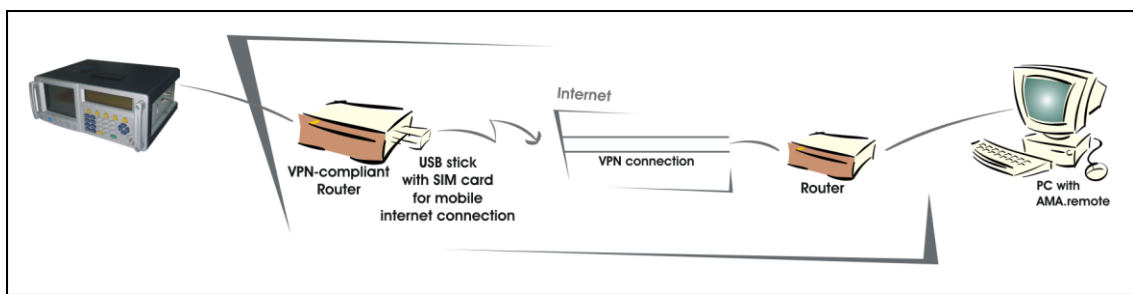
8.3.2   Cable connection

Another option for establishing the Internet connection for the measuring receiver consists of the use of a cable connection. The VPN-capable router to which the measuring receiver is connected is connected to a cable modem.
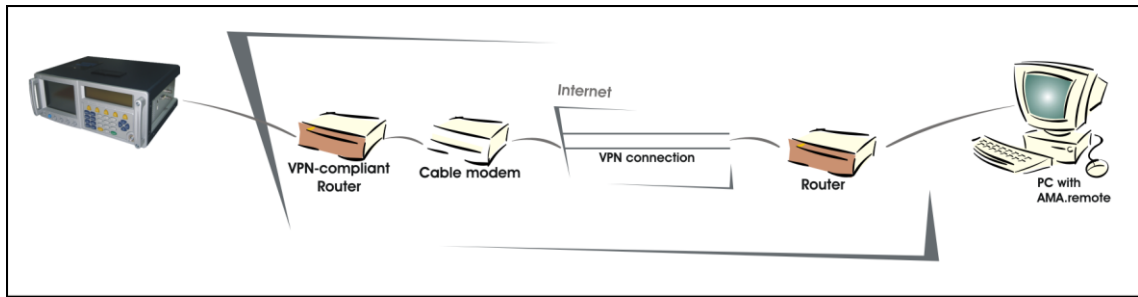
8.3.3   DSL connection

Similar to the use of a cable connection, the Internet connection can be established using a DSL connection. The VPN-capable router to which the measuring receiver is connected is connected to a DSL modem. DSL routers are also available. These products combine a DSL modem and router into one unit, and such units can be used in the same way.

If the VPN-capable router to which the measuring receiver is connected has integrated DSL functionality, it can be directly connected to the DSL connection. It may be the case that the DSL connection will be occupied during the period of remote control of the measuring receiver, blocking use of the Internet in a private household, for example.
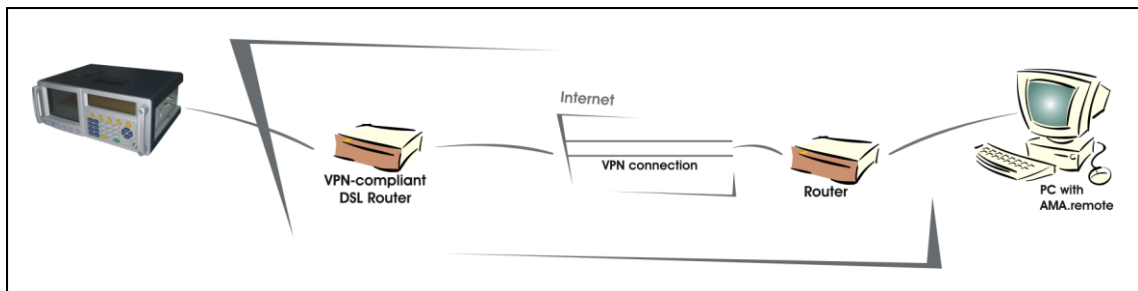
8.4   Summary of the procedure

In order to control or monitor the measuring receiver remotely using the AMA.remote software, the measuring instrument must first be connected to the network using an Ethernet cable. A suitable IP address is then assigned in the measuring receiver, and it may be necessary to carry out additional configuration.

If the measuring receiver and the PC with AMA.remote are located in the same network, the connection can be checked from the PC using a ping test of the IP address of the measuring instrument. If this test gives a positive result, the remote control, monitoring or long-term measurement data recording with the AMA.remote software can be started (more information is provided in "The remote control application area", "The monitoring application area" or "The long-term measurement data recording application area" section).

If the measuring receiver and PC with AMA.remote are to be connected via the Internet, the measuring instrument must first be connected to a router, and an Internet connection must be established if one does not yet exist. The Internet connection cannot be established from the measuring receiver, but must instead be established from a PC. A VPN connection must then be established between the router with the measuring instrument and the PC with AMA.remote. This connection can also be checked with a ping test from the PC with AMA.remote. As soon as this connection is successfully established, remote control, monitoring or measurement data recording with AMA.remote software can also be started in this case.

Section 9

The remote control application area

9.1   *Display*

If the "Remote control" tool is called up, the corresponding application area is displayed in the program window. As previously mentioned, this function can only be used after the SNMP interface is activated in AMA 310 (see section "Establishing a connection"). After a connection has been successfully established between the measuring receiver and PC with AMA.remote, the settings can be made and the parameters can be read on the measuring instrument.

The display in the top area of the window is similar to the one on the LCD of the measuring instrument. Parameters are also displayed here that are not displayed on the measuring instrument until submenus are activated. The central area of the program window contains control elements for entering the desired settings. A list of IP addresses of measuring receivers to which a connection exists appears in the bottom area.
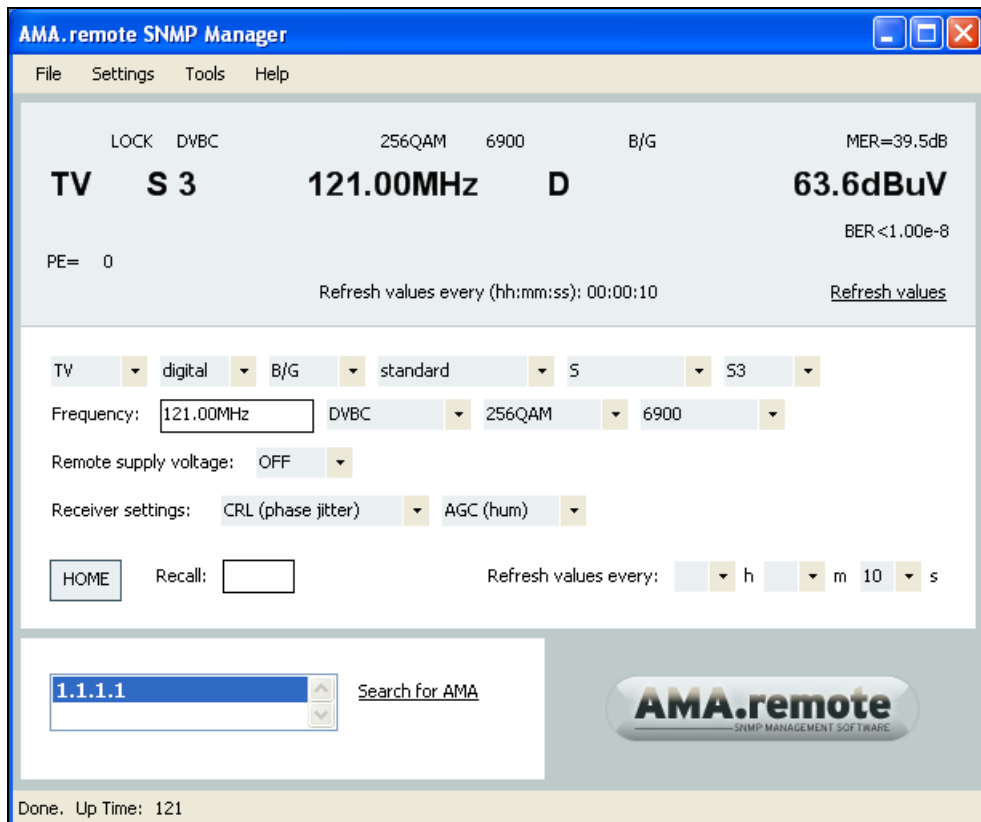
9.2   *General procedure*

9.2.1   *Connecting to a measuring receiver*

Once the user has started AMA.remote in administrator mode (see section "Start program"), clicking on "Search for AMA" triggers the search for measuring instruments in the network. All IP addresses that are already in the list are deleted in the process, so a prompt appears. The prompt asks whether the list should really be updated and whether all agents, i.e. measuring receivers, should be deleted along with their properties. Click "Yes" to start the search.
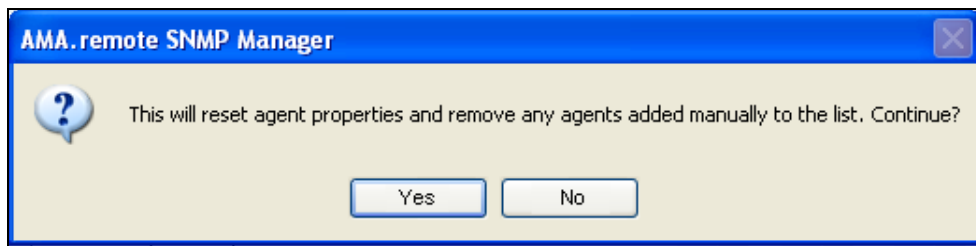
A message appears in the status bar that a search is being carried out for measuring receivers.

As soon as the search is complete, all IP addresses of the measuring receivers in the network appear in the corresponding list.
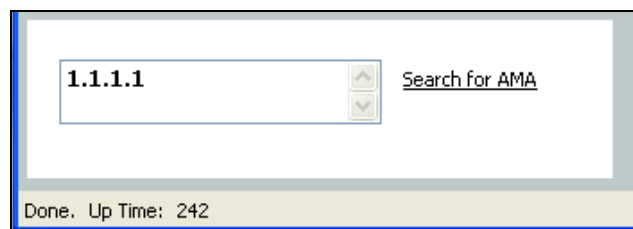
If no measuring receiver can be found in the network, a corresponding message appears.
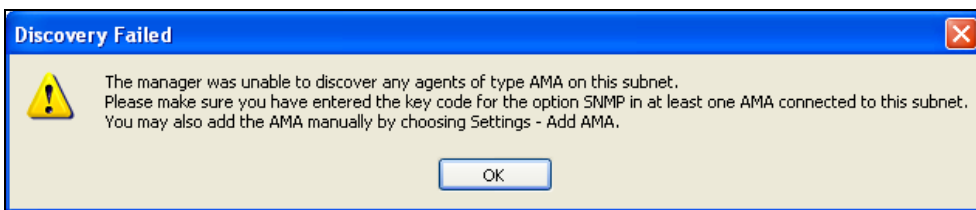
In many cases, the search is successful after a second search. It is also possible to select "Add AMA" from the menu bar. This inserts a measuring receiver directly into the list of agents (see the "Add AMA" section for more information). If the search for measuring receivers in the network is unsuccessful several times, it may make sense to change the transmission settings (see the "Transmission settings" section for more information).

Clicking the IP addresses of the measuring receiver that is to be remotely controlled causes the data to be retrieved. The parameters that are currently set on the measuring instrument and its measured values are retrieved.
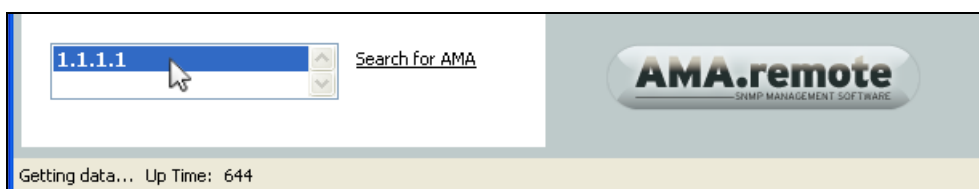
Furthermore, the system also determines if a user is already accessing the measuring instrument. If this is the case, and you're not using a standard login name, then you cannot change the measuring receiver settings. However, you can query measured values and parameters. You can only get full access to the measuring instrument once the other user has logged out.

When all data has been retrieved, the message "Done" appears in the status bar and the received values appear in the top area of the program window. If the connection fails, more information can be found in the "Connection problems" section.

Each time one of the IP addresses is clicked, data retrieval is triggered. Double-clicking an IP address opens a window for this agent's settings for sending and receiving data. These are settings

that are also made when manually adding a measuring receiver. You can find more information in the "Add AMA" section. In administrator mode, you can also remove the measuring receiver from the list of measuring instruments in the network by pressing the "Delete" key on your PC keyboard. This information is also available as a short info text, which is displayed when the you move the mouse pointer over the list of IP addresses.

9.2.2   Tuning the measuring receiver

In order to carry out a measurement, the measuring receiver is tuned to a channel or frequency. The measuring instrument is tuned using control elements in the centre of the program window.

The settings are made from left to right starting with "Range". The number and type of the displayed control elements are adjusted according to the previous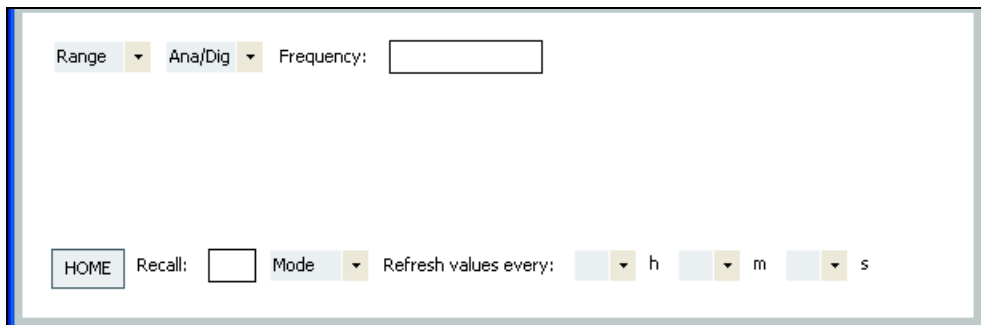 setting. After a setting has been made, the corresponding command is immediately sent to the measuring receiver. The control elements are deactivated until the measuring instrument has carried out the command. The currently applicable measured values and parameters are then retrieved by the measuring instrument, but it is not necessary to wait for this data to be received.

The entry of settings continues until the desired information appears on the screen. As soon as data retrieval is complete, the message "Done" appears in the status bar.

9.2.3   The HOME key

There is a control element for the remote control that corresponds to the "HOME" key on the measuring receiver. This control element resets the measuring receiver to the default status of the respective measuring range.

9.2.4   Recalling a tuning memory location

The fastest option for tuning a measuring receiver consists of calling up a tuning memory location. This is done by entering the desired memory location number directly into the text field provided for this purpose and completing the entry with the "Enter" or "Return" key.
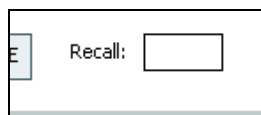
This procedure corresponds to the entry of a tuning memory location using the numeric keypad on the measuring receiver after the "RECALL" key has been pressed on the measuring instrument. The number of the memory location that has been called up appears as it is shown on the LCD of the measuring receiver on the top left.
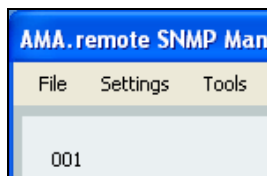
9.2.5   Mode oft the measuring receiver

You can set the measuring receiver mode to normal measurement (Measure), Analyzer, constellation diagram (Const) and scope display (Scope).
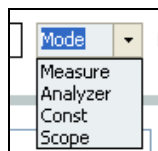
This is useful, for example, when the measuring receiver is connected to a transponder at the SCART connection and the output video signal is fed into a free channel. When AMA.remote is being used and you want to allow the user to access this channel, the user can view the analyzer display, constellation diagram display or scope display in real time as if they were standing at the measuring receiver.

You should only switch to the constellation diagram display when the instrument is tuned to a digital channel or a modulated return channel. Similarly, you should only switch to the scope display when tuned to an analog channel.

9.2.6   Automatic refreshing of the values

In order to avoid having to manually retrieve the data again and again, there is an automatic data retrieval option. The hours, minutes and seconds of the interval after which the values are to be refreshed are specified for this.

Due to the length of time needed for data transmission and time that the measuring receiver needs to carry out the commands, a short amount of time does not make sense. The possible lower tolerance level for a refresh time varies according to the measuring range and the transmission distance. The minimal possible time can be quickly determined using tests with different values, however.

Automatic refreshing of the values can be stopped by setting the values for hours, minutes and seconds to zero.
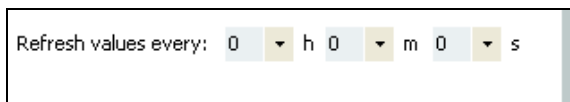
9.2.7   Refreshing the values manually

"Refresh values" can be activated to refresh the displayed values once. The values are current when "Done" appears in the status bar.

9.2.8 Connection problems

When the measuring receiver does not respond to a sent command, AMA.remote automatically repeats the command several times. If the measuring instrument does not respond within an appropriate period of time, the assumption is made that there is a connection problem, and a corresponding message appears.

After confirmation of this message, manual data retrieval can be started in order to determine whether the connection is experiencing a non-transient failure. If the connection problems only occur sporadically, it may make sense to change the transmission settings (see the "Transmission settings" and "Add AMA" sections for more information).
If a connection problem occurs during tuning of the measuring receiver, activation of the "HOME" command can be helpful. This resets the measuring instrument to a defined status, and tuning can begin again.

There are a variety of causes of connection problems. If the measuring instrument switches off or the Ethernet cable is disconnected, it is not possible to establish a connection to the measuring instrument, of course. A high volume of network traffic can also lead to delays in data transmission or to loss of data packets. A change in the transmission settings can also be helpful here.

For a connection via the Internet between a measuring receiver and a PC with AMA.remote, a check must be done for whether an Internet or VPN connection still exists. Many Internet providers change the IP addresses in their networks periodically. This can cause an existing connection to be interrupted.

In order to exclude the possibility that a network problem exists, it can make sense to run a ping test to the IP address of the measuring receiver. If network problems can be excluded, it might be that too many commands at once led to delayed processing. It can helpful in this case to wait several minutes before starting data retrieval again. Since the measuring receiver processes the commands as they were received, it can take an unusually long time until the measuring instrument executes the last command if the connection is bad.

9.3 File

The "File" dropdown menu is located on the far left of the menu bar.
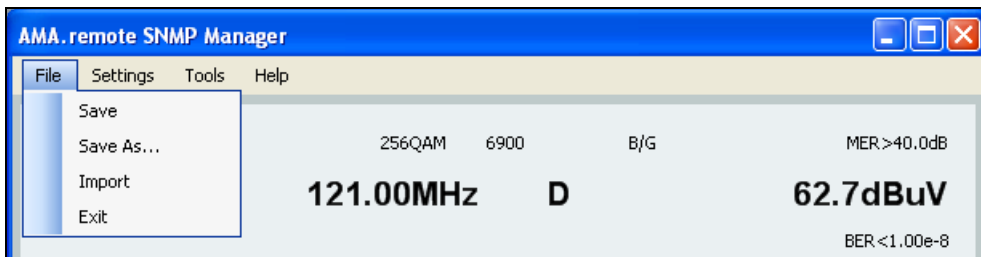
9.3.1 Save

The "Save" menu item saves the current parameters and measured values along with a time stamp in an XML file. If no file has been specified, the "Save as" window opens; otherwise the current data is attached to the data in the file that was most recently used. The name of the current file is shown in the status bar.
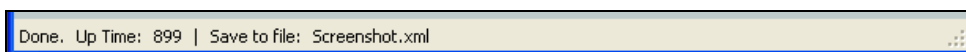
The XML file can be opened and edited with a spreadsheet program that supports editing of XML files.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Time	Recall	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbol rate	Rec.Modif.	Level/dBµV	MER/dB	BE
2	17/01/2011 16:25:12	62	TV	S 3	121.00		DVB-C	256QAM	6900		62.7	>40.0	<1
3	Time	Recall	Range	Channel	Frequency/MHz	LNB	Mode	Modulation	Symbol rate	Rec.Modif.	Level/dBµV	MER/dB	BE
4	17/01/2011 16:26:02	62	TV	S 3	121.00		DVB-C	256QAM	6900		62.7	>40.0	<1

9.3.2 Save as

As with "Save," the "Save As..." menu item saves the current parameters and measured values along with a time stamp in an XML file. When this menu item is selected, the "Save as" window opens. The save location is selected here and a file name is assigned. You complete the process by clicking "Save".

9.3.3 Importing a file

The "Import" menu item activates the "Open" window and allows you to import individual files or several files. No files can be imported for the remote control. Importing a file activates one of the other application areas. Accordingly, tuning memory files, channel table files and DataLogger files are available.
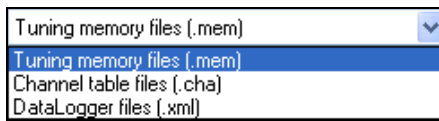
For more information, see the sections for the corresponding application areas.

9.3.4 Settings

You can activate the "Settings" drop-down menu from the menu bar. The drop-down menu looks different depending on the login mode. In administrator mode (see section "Start program"), you have options for editing the transmission settings, administrator settings and user settings, and to load the user channel table. In user mode, you can only load the user channel table.
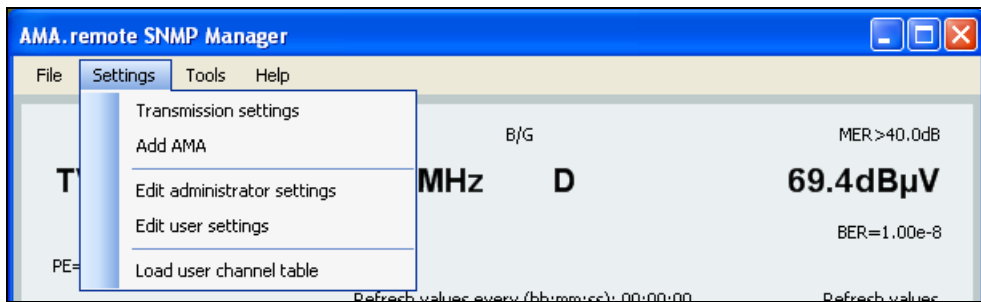
9.3.5 Transmission settings

All settings for data transmission can be made under the Transmission settings item.
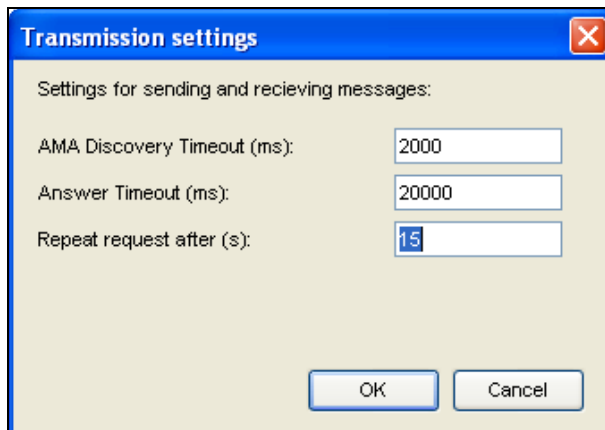
The settings apply to all connections between AMA.remote and measuring receivers while the program is running.

The AMA Discovery Timeout is the length of time for the search for measuring instruments in the network. The standard value is 2 seconds (2,000 milliseconds). If a measuring instrument in the network is often found shortly before this timeout or not until the second attempt, it can make sense to increase this value after the program is started and before a search is run. This causes AMA.remote to wait longer for responses from the network.

Answer Timeout refers to the time that AMA.remote waits for a response from the measuring receiver after sending a command. After this period elapses, an error message is generated. This error message is not displayed until it occurs several times, since it is generated for every command for which no response is received. It can be the case that the command was already repeated and responded to. The standard value is 20 seconds (20,000 milliseconds). It can make sense to increase this time if there is heavy network traffic.

Before the Answer Timeout has elapsed, AMA.remote repeats the request. The standard value is 15 seconds. This time should be less than the Answer Timeout.

9.3.6   Add AMA

A measuring receiver can be manually entered into the list of SNMP agents of type AMA via "Add AMA". The setting options correspond to those shown when an IP address in the list is double-clicked.
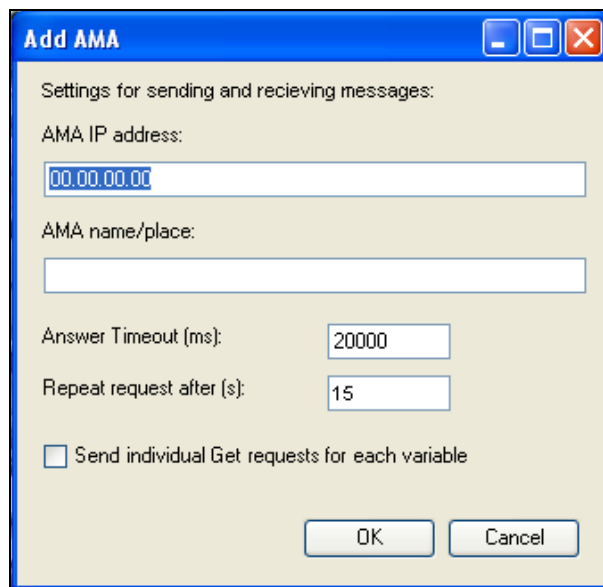

The AMA IP address is the address that is entered in the measuring receiver. Furthermore, you can enter a name or place for the measuring receiver in order to make it easier to assign an instrument to an IP address.

The answer timeout corresponds to the setting in the transmission parameters, but is used explicitly for the entered IP address here. The same applies for the time after which a request is repeated.

The commands for requesting the measured values and parameters from a measuring receiver are sent in small packets by default. It may be advantageous to request each value individually. This setting can be made by placing a tick next to "Send individual Get requests for each variable".

9.3.7   Edit administrator settings

You can change the administrator login data at any time by entering the current password. You can create a new login name and a new password.

When you try to connect with a measuring receiver, the system queries whether an administrator or user is already accessing the instrument. If that is not the case, the login name is transmitted to the instrument. From that moment on, this login name can be read by other PCs in order to see who is currently accessing the instrument. That's why it makes sense to use the name of a person as the login name, in order to make it easier for other administrators and users to identify who has access to the instrument.

There is only one administrator login for an AMA.remote installation.

The password is encrypted and saved on the PC. If you forget your login name or password, contact the manufacturer's service department (see section "Contacting the manufacturer").

9.3.8   Edit user settings

You can create multiple users for an AMA.remote installation.

All of the users that have been created are listed under "Existing Users".

You can click "Add user" to create a new user. As with the administration settings, when you try to connect with a measuring receiver, the system queries whether an administrator or user is already accessing the instrument. If that is not the case, the login name is transmitted to the instrument. From that moment on, this login name can be read by other PCs in order to see who is currently accessing the instrument. That's why it makes sense to use the name of a person as the login name, in order to make it easier for other administrators and users to identify who has access to the instrument.
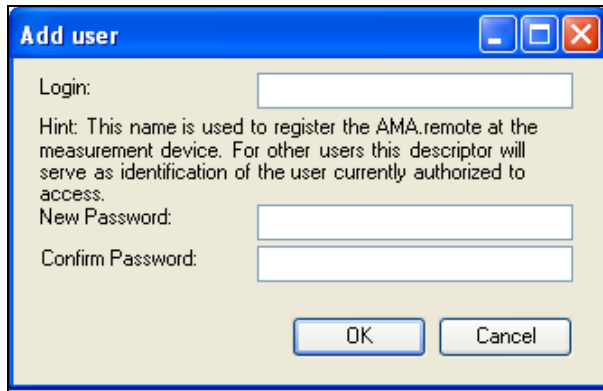
You can change the password for an existing user by clicking "Edit user". This allows you to overwrite login data that have been lost or forgotten.

You can delete a user from the list by clicking "Delete user". After you confirm the query, if you really want to delete the user, the login data for the selected user are deleted.

9.3.9   Loading a user channel table

Channel tables for the various television standards are stored in the measuring receiver, and this corresponds to the standard setting. It is possible to load a user channel table, the use of which is taken into account when selecting a channel. In order to create the same conditions as on the measuring receiver, the user channel table that is used in the measuring receiver can also be loaded into AMA.remote.
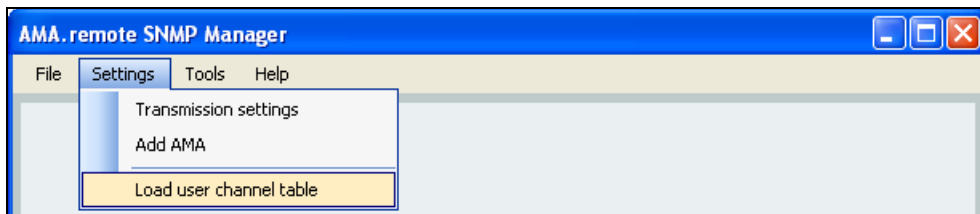
The file name of the currently loaded user table appears in the status bar on the bottom edge of the AMA.remote window.
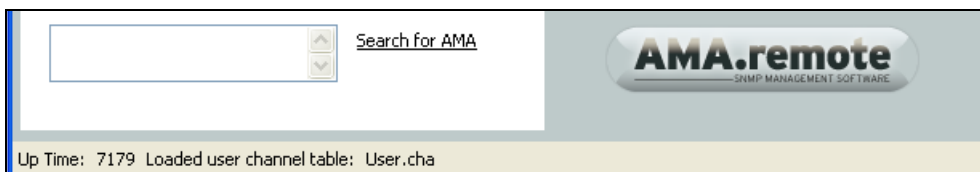
During the entry of the settings for tuning of the measuring receiver, the selection "standard" appears for the stored channel tables, and the selection "user" appears for the currently loaded user channel table. When no user channel table is loaded, only "standard" appears as an option.

TV ▼ digital ▼ Norm ▼ Channel table ▼ Channel type ▼ Channel ▼

Frequency: [   ] DVB standard upply voltage: [   ] ▼
user

Section 10

The monitoring application area

10.1   *Display*

When the "Monitoring" tool is opened, the associated application area is displayed in the program window. As previously mentioned, this function can only be used after the SNMP interface is activated in AMA 310 (see section "Establishing a connection"). After a connection has been established between the measuring receiver and PC using AMA.remote, the measured values of a tuned channel or of a tuned frequency can be monitored.

The upper part of the "Settings" view shows whether tuning was done through the tuning memory or remote control tool. A small table displays the main parameters of the channel to which the device was tuned. In the middle section, you can enter the settings for the lower and upper limits of the measured values to be monitored. In addition, there are settings for specifying whether monitoring should occur only for a certain period of time and, with digital channels, whether the state (locked/unlocked) and packet errors should be monitored.
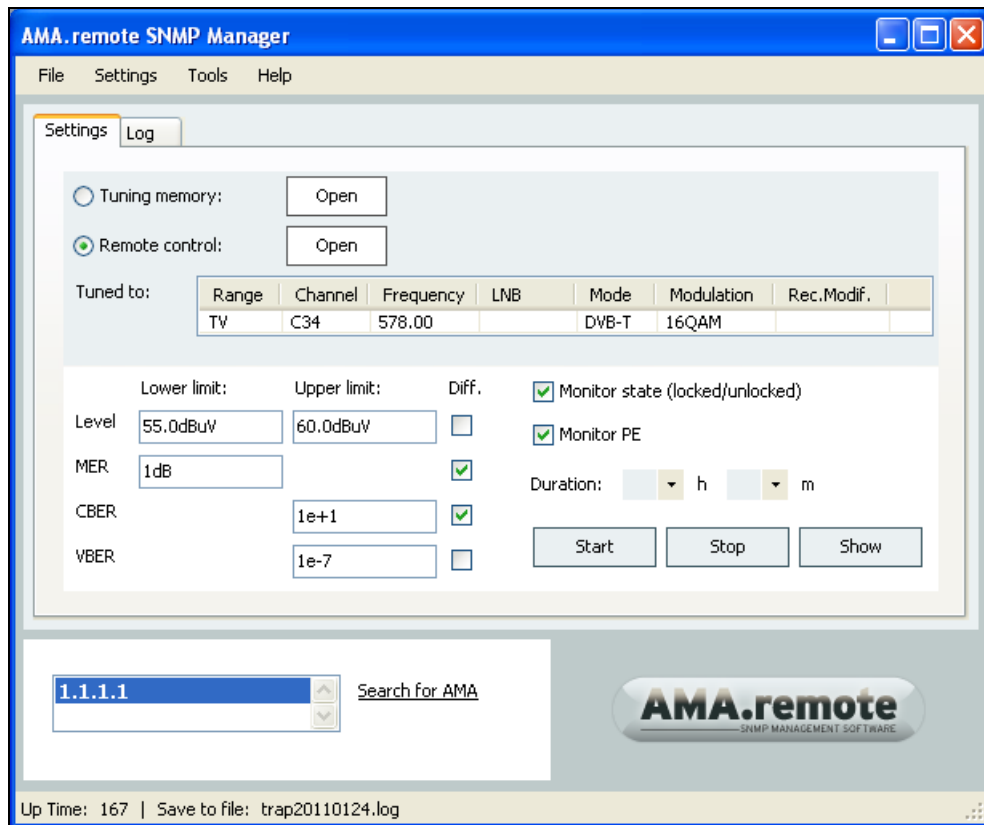
The "Log" view of the "Monitoring" tool shows, in a table, the data that was exchanged between the AMA.remote and measuring instrument. After monitoring starts, the measuring receiver is configured and, if the instrument triggers a trap message, a corresponding message appears. In addition, the start time, all trap messages and the stop time are always saved automatically in a log file (see section "Save As").
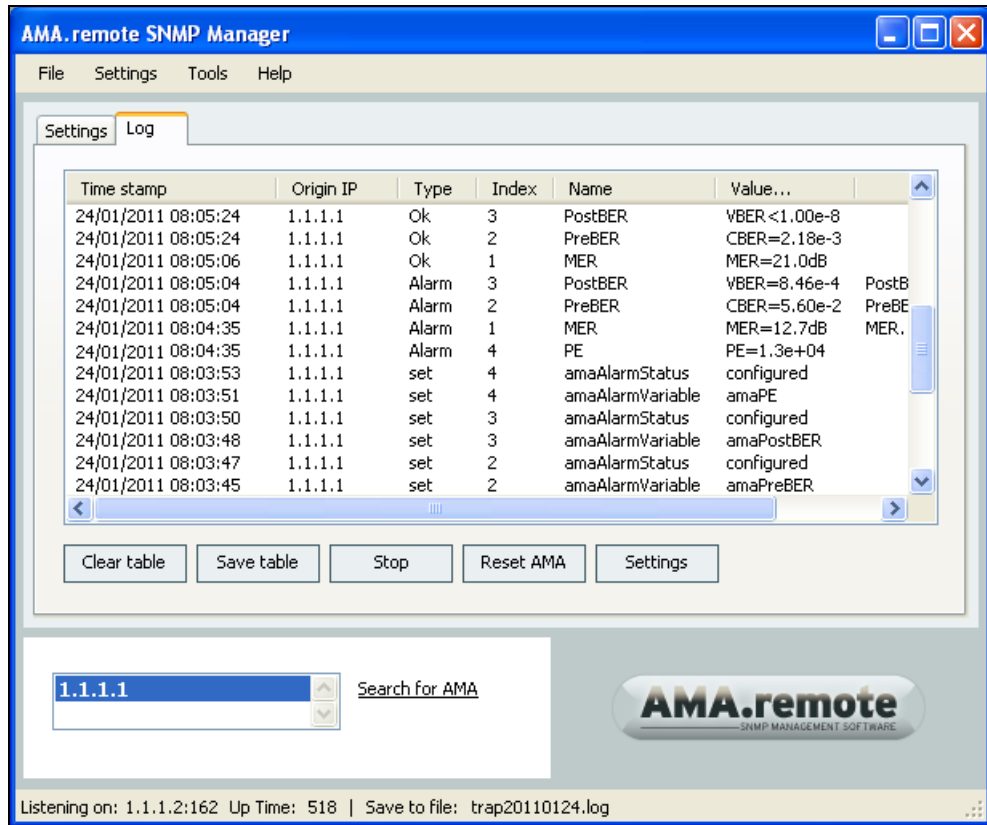
10.2 General procedure

Before a channel can be monitored by the measuring receiver, the instrument must be tuned to the corresponding frequency. To do this, you can either select a row from a tuning memory table or use the "Remote control" tool.

If the instrument has not yet been tuned, you can use one of the "Open" interfaces to select the corresponding tool. Also, either one of the tools can be activated in the "Tools" menu item.

10.2.1   Tuning using a tuning memory location

When you select a row in the tuning memory list and then switch to the monitoring view, the instrument is automatically tuned according to the information.

It may happen that a tuning memory assignment other than the one selected in AMA.remote is loaded in the measuring receiver. To ensure that tuning is always successful, the parameters of the marked row are sent to the measuring instrument according to their order. The tuning memory table is greyed out during this time, and the view does not switch to "Monitoring" until after tuning has taken place.

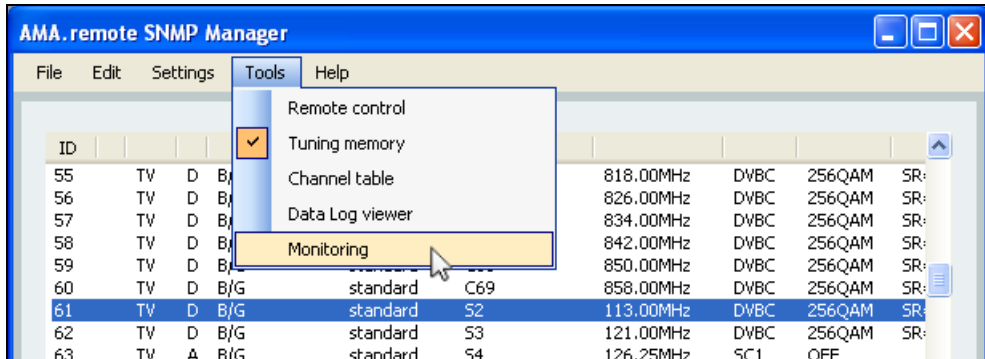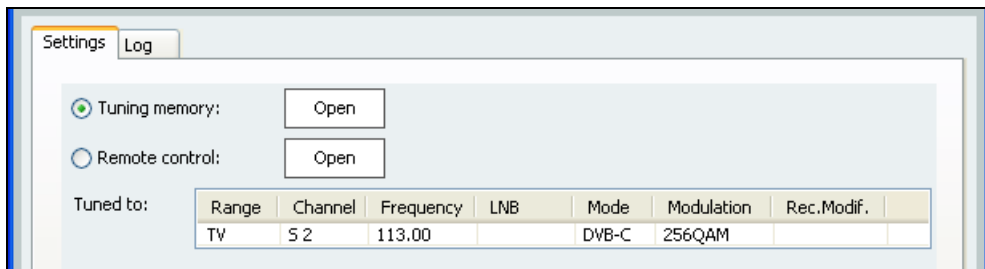In the small table displayed, you can check whether tuning was successful based on the main parameters to which the measuring receiver was tuned.

NOTE!   If the tuning memory assignment that is loaded in the instrument is known, tuning takes place quicker when you enter the number of the desired tuning memory location next to "Recall:" in the "Remote control" tool directly.

Tuning from the "Tuning memory" tool, then switching to the "Monitoring" view, also works without having to start in the "Monitoring" view. For example, after the program starts and the connection with a measuring receiver has been established, you can go directly to the "Tuning memory" application area, select a row and switch to "Monitoring."

10.2.2   Tuning through remote control

After the measuring receiver has been tuned successfully in the "Remote control" application area, you can switch to the "Monitoring" view.
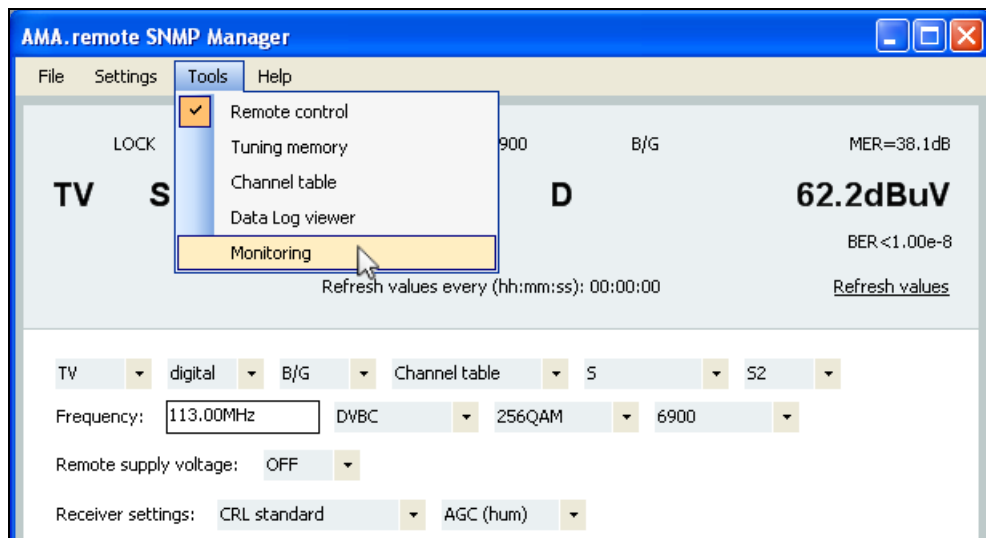
Data retrieval from the measuring receiver must be complete before the "Monitoring" tool can be activated ("Done" will appear in the status bar).
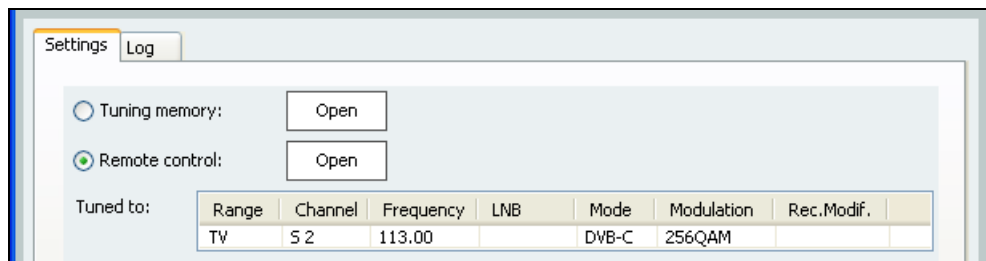
Even in this case, the small table shows the main parameters.

10.2.3 Values to be monitored

Depending on the monitoring program of the instrument (see the operating manual of the measuring receiver), various measured values can be monitored according to the measuring range.

Range	Operating mode	Monitored parameters
SAT		
	ATV	Level, S/N (only with S/N option)
	DVB-S	Level, MER, CBER, VBER, PE
	DVB-S2	Level, MER, CBER, LBER, PE
TV		
	ATV	Level, S/N (only with S/N option)
	DVB-C	Level, MER, BER, PE
	DVB-T	Level, MER, CBER, VBER, PE
	Euro-DOCSIS	Level, MER, BER, PE
	US-DOCSIS	Level, MER, VBER, PE
FM		Level
RC		Level, MER, BER
DAB		Level, MER, CBER

In addition, the state (locked and unlocked) can be monitored when digital channels are used.

Depending on tuning, possible entries for the relevant measured value are displayed.
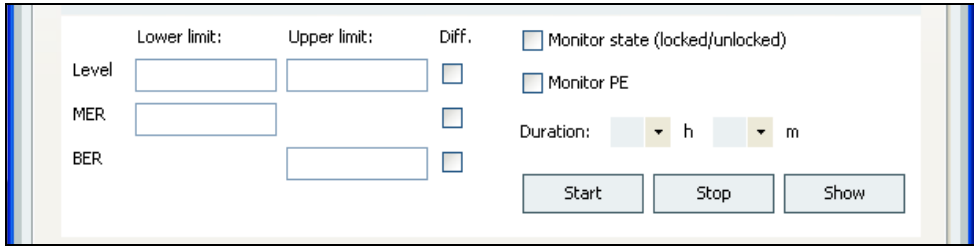
A measured value is included in monitoring when a limit is specified. If the upper limit is exceeded, or the lower limit is not reached, the measuring instrument sends an "Alarm" message. As soon as the measured value is again within the limits, an "OK" message is sent.

Limit values can be entered as an absolute value or a difference value. When an absolute value is entered, the upper limit or lower limit is entered with a specific value.

A difference value can be entered by activating the checkbox under "Diff." at the level of the corresponding measured value. The possible value entries correspond to the tolerance specifications of the instrument's monitoring program (see the operating manual of the measuring receiver).

| Parameter	Difference value
Level	0.1 dB – 9.9 dB
MER	0.1 dB – 9.9 dB
S/N	0.1 dB – 9.9 dB
BER	e+1 – e+3

Entering, for example, 1 dB as the lower limit for the level, MER or S/N means that the measuring instrument sends a message if the measured value is more than 1 dB lower than the lower limit. The difference is taken from the last measured value that was transmitted before switching to the "Monitoring" view.

If the instrument, for example, was just in the unlocked state because of a very poor signal, no reference values are present. Next, an error message will appear, asking you to enter an absolute value.
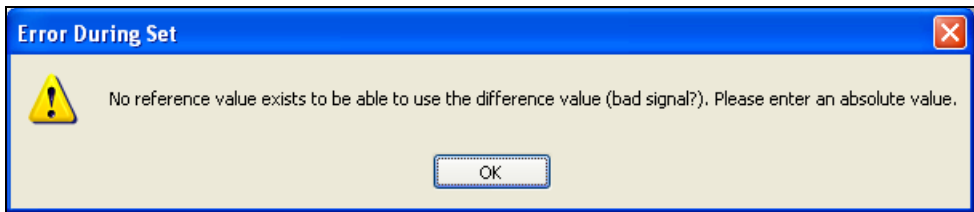
The difference value for BER also applies to BER, CBER, VBER and LBER. When "e+1" is entered as the upper limit, it means that the bit error rate can be increased by a factor of 10 without triggering the alarm. The "e" stands for exponent, and it is the same as entering "1*10^1" (for $1*10^1$) or "1x10^1" (for $1x10^1$).

There are no limit value specifications for packet errors (PE). If the packet error counter is to be included in the monitoring, the "Monitor PE" checkbox must be activated.
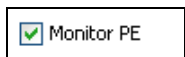
An "Alarm" message is sent to AMA.remote as soon as at least one packet error occurs. If an error is permanent, another error message is sent after 60 seconds. This means that, when packet errors occur continuously, the current state is transmitted every minute (see also the operating manual of the measuring receiver). An "OK" message is not sent during packet error monitoring as it is not possible to reach the limits when no limit is entered.

The state of the measuring receiver is monitored when the checkbox next to "Monitor state (locked/unlocked)" is selected.

☑ Monitor state (locked/unlocked)
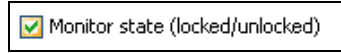
If the state changes from "locked" to "unlocked" or vice versa, a "State" message is sent with the information on the current state.

10.2.4 Entering the duration of monitoring

You can enter the duration of monitoring. After the specified time has expired, the monitoring information is cleared in the measuring instrument and monitoring ends.

Duration: 1 ▼ h 30 ▼ m

The information on the duration of monitoring can be reset by setting the value for hour and minute back to nil.
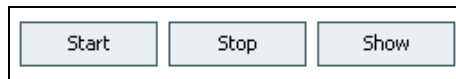
Duration: 0 ▼ h 0 ▼ m

Monitoring can also be started without entering a duration period and stopped again after any amount of time.

10.2.5 Starting monitoring

After all information required for monitoring has been entered, the process is activated by clicking "Start".

Start   Stop   Show

First, the actual SNMP Manger of AMA.remote is started. The three pieces of information required are the IP address of the PC on which AMA.remote is running, the SNMP trap port and the engine ID. Usually, you can leave the suggested values and click "OK." More information on the SNMP-specific information can be found in document "AN001 SNMP Remote Control Application Note."

Start Manager

PC IP address: 1.1.1.2   Port: 162

EngineID: kws_electronic.SNMPManager

OK   Cancel
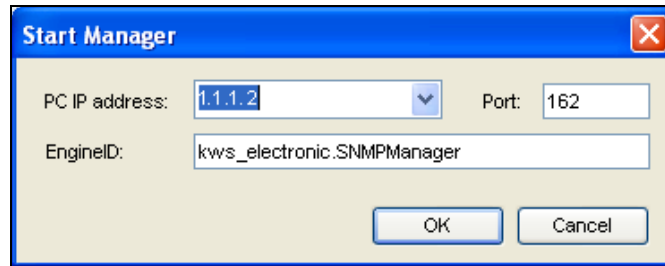
The screen switches to the "Log" view, and the data that was exchanged between the AMA.remote and measuring instrument is shown in edited form in a table. As previously mentioned, this data is also automatically saved in a log file together with the start and stop time (see section "Save As").

10.2.6 The log table

First, the measuring receiver is configured for monitoring. A time stamp and the IP address of the instrument are displayed for every message received by the instrument. The message type is "set" during configuration as the corresponding values in the measuring receiver are being set. The index corresponds to the row in one of the three SNMP trap tables (amaEventTable, amaTrapTable and amaAlarmTable) in which the configuration data are stored in the instrument. As Event Owner, you can see the IP address of the PC, which means this is the address to which the measuring instrument sends the messages. The "State" parameter is treated as a trap variable; all other measured values that should be monitored are treated as alarm variables. Configuration was successful when "configured" is displayed as the state. The SNMP-specific details will not be discussed further at this point. Detailed information regarding the configuration of the measuring receiver via SNMP for monitoring and, in particular, the SNMP trap tables can be found in the document "AN001 SNMP Remote Control Application Note."
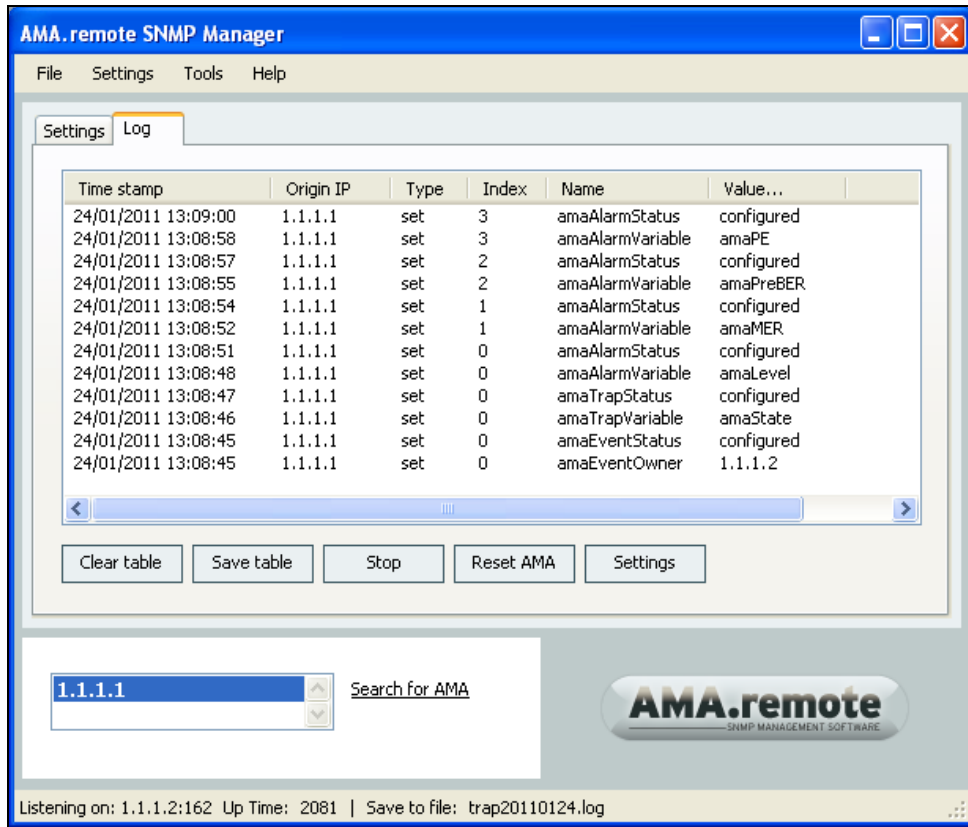
"Clear table" can be used to clear the displayed table content. The contents of the log file (see section "Save as") is not affected. Primarily, only SNMP messages are saved in the log file. As this information can be too detailed in some instances, "Save table" gives you the option to save the displayed table as an XML file. An XML file can be opened and edited with a spreadsheet program that supports editing of XML files.

	A	B	C	D	E	F	G
1	**Time stamp**	**Origin IP**	**Type**	**Index**	**Name**	**Value...**	
2	24/01/2011 13:29:47	1.1.1.1	Alarm	3	PE	PE= 2012e-8	
3	24/01/2011 13:23:53	1.1.1.1	Ok	2	PreBER	BER<1.00e-86	
4	24/01/2011 13:23:48	1.1.1.1	Alarm	2	PreBER	BER=5.50e-7	PreBERmax:=1.00e-07
5	24/01/2011 13:09:00	1.1.1.1	set	3	amaAlarmStatus	configured	
6	24/01/2011 13:08:58	1.1.1.1	set	3	amaAlarmVariable	amaPE	
7	24/01/2011 13:08:57	1.1.1.1	set	2	amaAlarmStatus	configured	
8	24/01/2011 13:08:55	1.1.1.1	set	2	amaAlarmVariable	amaPreBER	
9	24/01/2011 13:08:54	1.1.1.1	set	1	amaAlarmStatus	configured	
10	24/01/2011 13:08:52	1.1.1.1	set	1	amaAlarmVariable	amaMER	
11	24/01/2011 13:08:51	1.1.1.1	set	0	amaAlarmStatus	configured	
12	24/01/2011 13:08:48	1.1.1.1	set	0	amaAlarmVariable	amaLevel	
13	24/01/2011 13:08:47	1.1.1.1	set	0	amaTrapStatus	configured	
14	24/01/2011 13:08:46	1.1.1.1	set	0	amaTrapVariable	amaState	
15	24/01/2011 13:08:45	1.1.1.1	set	0	amaEventStatus	configured	
16	24/01/2011 13:08:45	1.1.1.1	set	0	amaEventOwner	1.1.1.2	
17							

As previously mentioned in the "Values to be monitored" section, a "State" message can be sent by the measuring receiver if the state changes from locked to unlocked or vice versa. "State" is then displayed as the message type in the log table. In addition, "State" is also the monitored measuring parameter, and this name is also displayed. Finally, the current state (UNLK or LOCK) is sent with a "State" message and entered into the log table.

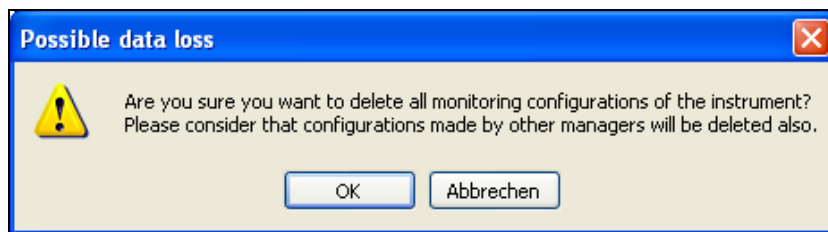| Time stamp	Origin IP	Type	Index	Name	Value...		
24/01/2011 13:41:48	1.1.1.1	Ok	0	Level	L= 62.3dBuV		
24/01/2011 13:41:48	1.1.1.1	State	0	State	LOCK		
24/01/2011 13:41:42	1.1.1.1	Alarm	0	Level	L= 20.9dBuV	Lmax:=66.0dBuV	Lmin:=62.0dBuV
24/01/2011 13:41:42	1.1.1.1	State	0	State	UNLK		

If a specified limit is exceeded or has not been reached, an "Alarm" message is sent. Along with this message type, the name of the measured value to be monitored (e.g., "Level"), the current value and the lower and/or upper limit, depending on specifications, are displayed. As soon as the

measured value is again within the specified limits, an "OK" message appears and reports the current value.

"Stop" can be used to end monitoring. All entries in the SNMP trap tables of the measuring receiver that were made during configuration are cleared at this time.
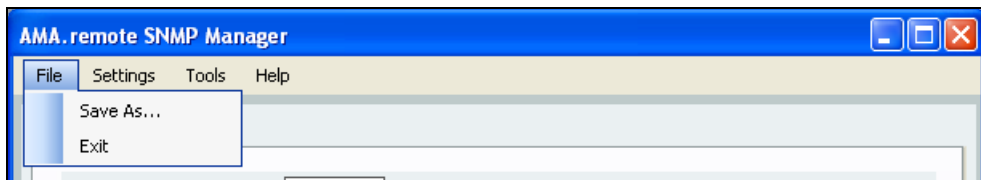
Time stamp	Origin IP	Type	Index	Name	Value...
24/01/2011 13:46:01	1.1.1.1	set	0	amaEventStatus	reset
24/01/2011 13:46:00	1.1.1.1	set	0	amaTrapStatus	reset
24/01/2011 13:46:00	1.1.1.1	set	3	amaAlarmStatus	reset
24/01/2011 13:45:59	1.1.1.1	set	2	amaAlarmStatus	reset
24/01/2011 13:45:59	1.1.1.1	set	1	amaAlarmStatus	reset
24/01/2011 13:45:58	1.1.1.1	set	0	amaAlarmStatus	reset

For example, in the event that the PC crashed while monitoring with AMA.remote was running and, therefore, the configuration of the instrument could not be reset properly, there is a "Reset AMA" button. This button clears all entries in the SNMP trap tables of a measuring receiver, even those that may have been made by another SNMP management program. For this reason, a prompt appears asking you if you really want to proceed before AMA is reset.

Possible data loss

Are you sure you want to delete all monitoring configurations of the instrument?
Please consider that configurations made by other managers will be deleted also.

OK   Abbrechen

10.3   File

The "File" dropdown menu is located on the far left of the menu bar.

AMA.remote SNMP Manager

File   Settings   Tools   Help

Save As...
Exit

10.3.1   Save as

If no memory location for the log file was specified before monitoring started, the file is automatically stored in the installation path for AMA.remote. For example, this path could be "C:\Program Files\AMAremote\". If you want to store the log file in another directory, enter the path in the "Save As..." menu item.

The file is automatically named "trapyyyymmdd.log", where "yyyy" stands for year, "mm" for month and "dd" for day. However, this proposed file name can be changed. The "log" file extension signifies the log file, which is a common text file that can be opened using a text editor.
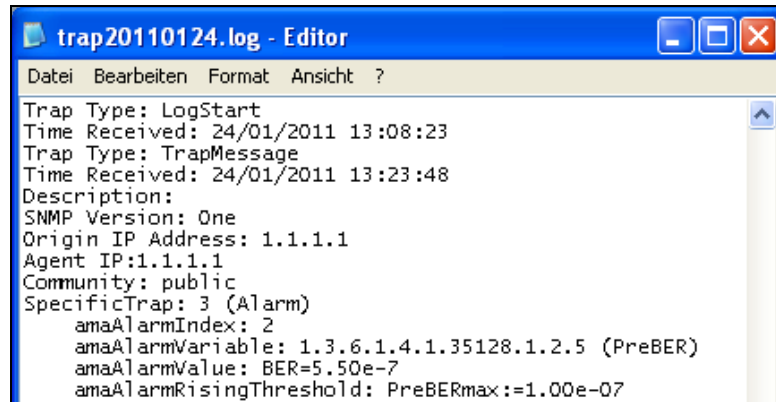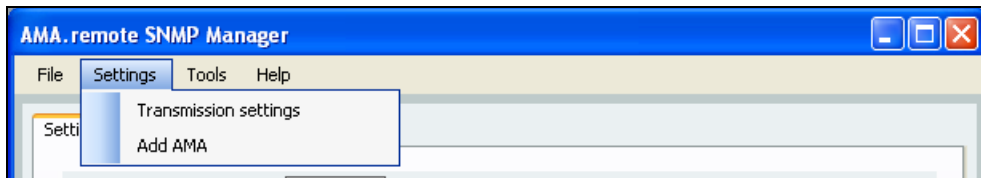
The file name under which the log data is being saved is shown in the status bar.
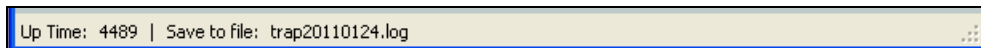
10.4   Settings

The "Settings" dropdown menu can be activated using the menu bar. Setting options for data transmission are summarized here.

The submenu items correspond to those in the "Remote control" view; refer to the "Settings" subsection in "The remote control application area" section.

# The long-term measurement data recording application area

11.1 Display

Calling up the "long-term measurement" data recording tool displays the corresponding application area in the program window. As previously mentioned, this function can only be used after the SNMP interface has been activated in AMA 310 (see section "Establishing a connection"). Once a connection between the measuring receiver and PC has been established using AMA.remote, up to five channels or frequencies can be monitored.

Under "Recall" in the "Settings" view, the tuning memory location can be specified for each one of up to five measurements. The contents of the tuning memory location can be checked using "Check", since the corresponding memory location is called up for the measuring receiver. A small table below for monitoring displays the main parameters of the channel to which the device has been tuned. The measuring interval and, if desired, the duration of the measurement(s) can also be set in this view.
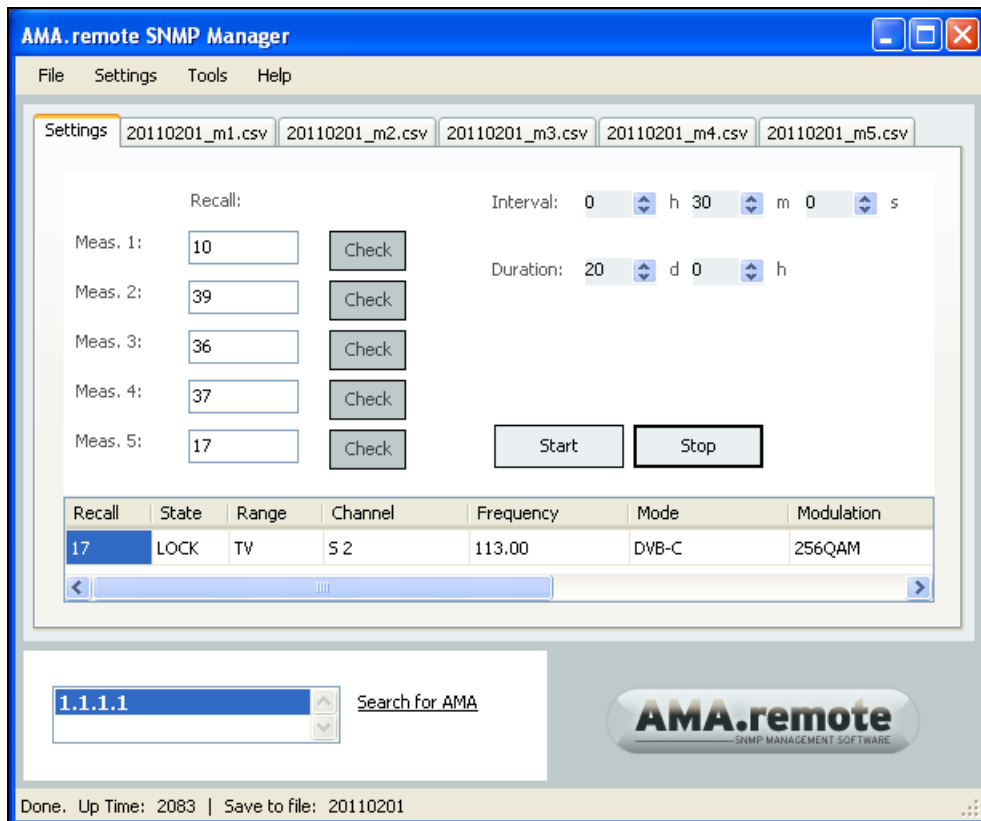
The measured values are displayed as graphs in the remaining tabs. During measurement, the measured values are saved as CSV files, whose names appear on the tabs. The main parameters of the measurement can be seen in a small table in each view. The respective measured values are displayed in diagrams.
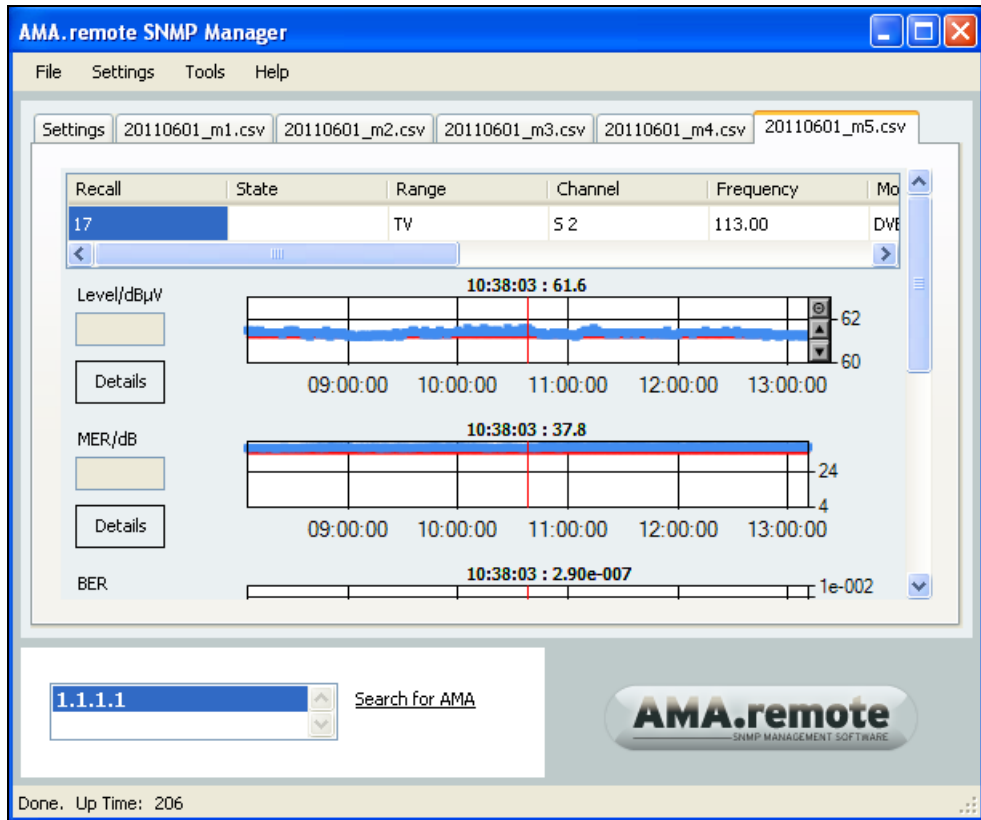
Another program window is opened if you click on "Details" to the left of a diagram. This window is for evaluating a set of measurements. A limit can be entered, and the measured values up to that limit will be analysed. In addition to other information in this view, a table with the selected data is displayed at the bottom of the window.
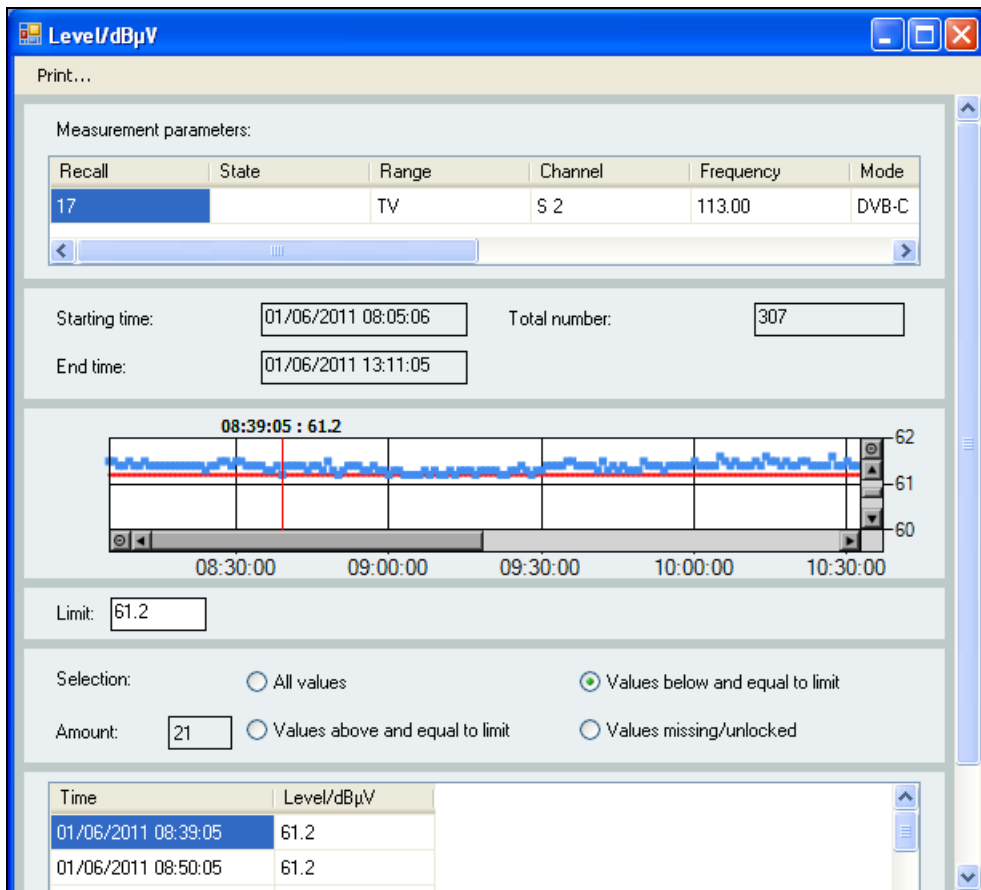
11.2   General procedure

In order to carry out a long-term measurement data recording, the tuning memory assignment for the measurement receiver must be known. The memory assignment can be exported from the measuring receiver with a USB stick and imported using AMA.remote (see the section on "Importing a tuning memory file"). Suitable memory locations can be defined for a measurement data recording in the "Tuning memory" program view.

Before one or more channels can be monitored or measurement data can be recorded, the desired tuning memory location must be specified and checked.
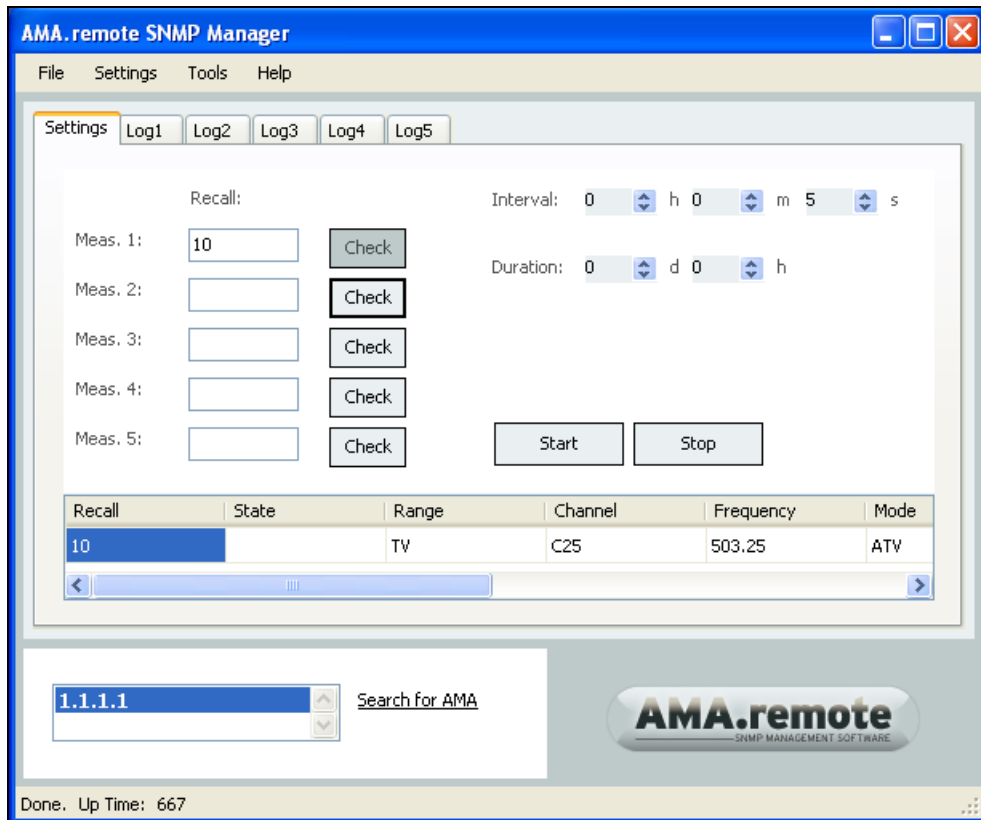
If the specification of the tuning memory location is not verified when "Check" is activated, an error message appears at the start of the measurement.
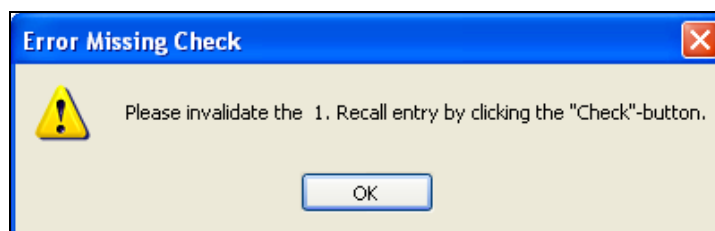
The control elements are deactivated while the measuring instrument is being tuned. The measuring receiver has been successfully tuned when "Done" appears in the status bar. The information in the table is then up to date.
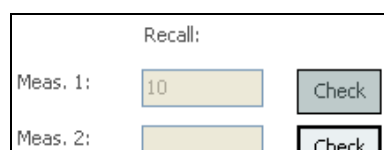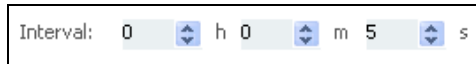

The check on the specified tuning memory location may show as being successful if a different tuning memory assignment to what the user is expecting is loaded in the measuring receiver. Use the display of the main parameters in the table to check whether these are the desired parameters.

In rare cases, the measuring instrument cannot call up the tuning memory location correctly due to a transmission error, for example. The memory location number must be entered a second time and "Check" must be activated again. During the measurement, the parameters shown here are compared with the values received and are retrieved again automatically if there is a discrepancy. This is why it is important that the measuring parameters in the table are checked for correctness.

11.2.1 Measurements for one channel

If just one channel is to be monitored, the measuring instrument is tuned once at the start time and just the measured values are called up at each interval in the following. This saves time compared to measurements with several channels that have to be switched between. The minimum possible interval here is therefore 5 seconds.
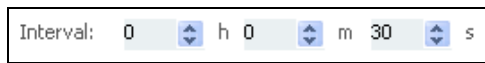
Interval:　0　h　0　m　5　s

Furthermore, if long-term measurement data is being recorded from one channel, this channel can be monitored with the "Monitor" tool in parallel (see the "Monitoring application area" section). We recommend that you configure the measuring instrument for monitoring first and then start the measurement data recording. Since the channel in the measuring instrument is not changed, it continues to be monitored. Any value that exceeds the limit is displayed during monitoring, while in the background the measured values are recorded at the given interval. In this way, both gradual trends and infrequent disturbances can be monitored.

11.2.2 Measurements for two to five channels

For measured value recordings from several channels, the measuring receiver is tuned before each measurement, and the measured values are then retrieved. This can take several seconds, especially for digital channels. Therefore, the minimal possible interval here is 30 seconds; measuring five digital channels can take around one minute.

Interval:　0　h　0　m　30　s

11.2.3 Entering the duration of a long-term measurement data recording

You can enter the duration of a measurement data recording. The recording will end automatically after the time given.

Duration:　0　d　0　h

The settings for the duration of the recording can be reset by setting the value for days and hours back to nil. Measurement data recording can also be started without entering a duration period and stopped again with "Stop" after any amount of time.

11.2.4 Memory requirement

Around 50 bytes are required for a digital measurement with values for the level, MER, CBER, VBER and PE, for example. There must be enough memory available for the measurement data, which depends on the number of measurements, derived from the specifications for the interval and duration.

As already mentioned, the measured values are saved in CSV files during measurement. This data format was chosen because the files can then be opened with standard spreadsheet programs as well. However, the number of rows cannot exceed 65536. For this reason, a message appears requesting to begin a new measurement if the number of rows exceeds 65000. This gives enough time to end one measurement and start another with a different file name. This guarantees that the files can be read by other programs.
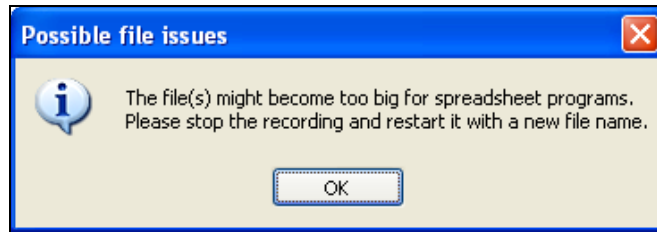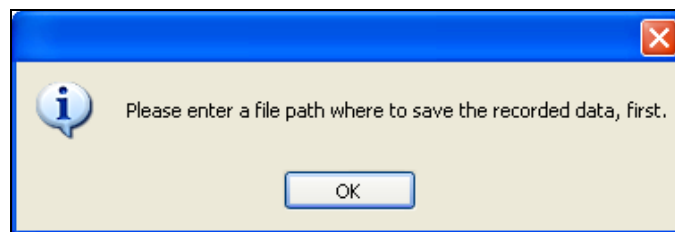
11.2.5 Starting a measurement

After entering the tuning memory location to be used, the measurement interval and, if necessary, the duration, the measurement is started by clicking "Start".

If no location for storing the measurement file(s) has been given with the menu item "Save as..." (see "Save as" section), a message will appear and the "Save as" window will be opened.


Once the file path is known, the long-term measurement data recording is started. After receiving the measured values for a channel, the view switches to the corresponding diagrams.

11.2.6 The measured data

Various measured values are retrieved depending on the measuring range.

Range	Operating mode	Measurable parameters
SAT		
	ATV	Level, S/N (only with S/N option)
	DVB-S	Level, MER, CBER, VBER, PE
	DVB-S2	Level, MER, CBER, LBER, PE
TV		
	ATV	Level, S/N (only with S/N option)
	DVB-C	Level, MER, BER, PE
	DVB-T	Level, MER, CBER, VBER, PE
	EU-DOCSIS	Level, MER, BER, PE
	US-DOCSIS	Level, MER, VBER, PE
FM		Level
RC		Level, MER, BER
EMI		Field strength (FS)
DAB		Level, MER, CBER

The main measuring parameters and the last received status of the measurement (locked or unlocked) are shown in a single-row table. The measurement data is displayed in diagrams. To the left of each diagram, the measured value type and the last received value are each shown in a text field. By clicking on the diagram, a cursor, represented by a red line, is placed on the closest data point. The measurement time and the measured value of the selected data point are displayed above the cursor.
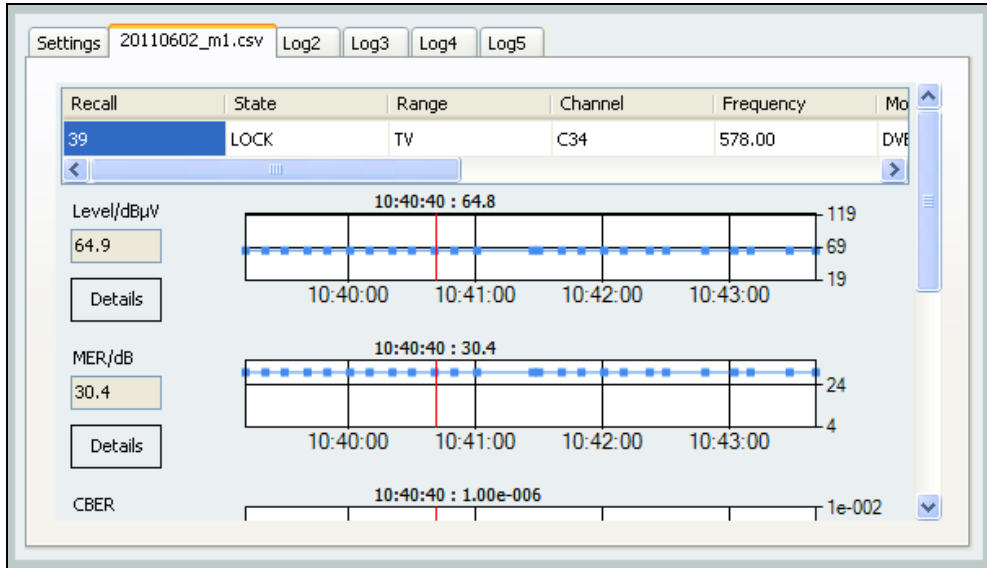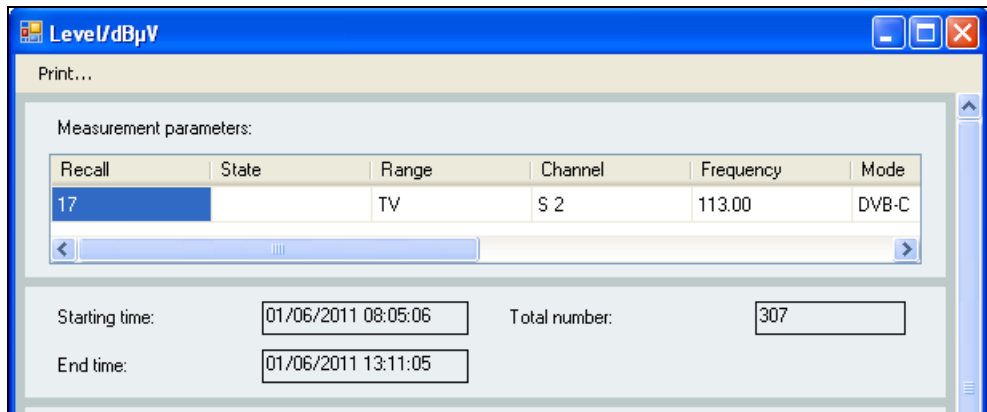
The section of the diagram displayed can be zoomed in on horizontally and vertically by moving the mouse with the left mouse-button held down. You can zoom out of the section again by clicking on the minus sign next to the scroll bar for scrolling along the section.
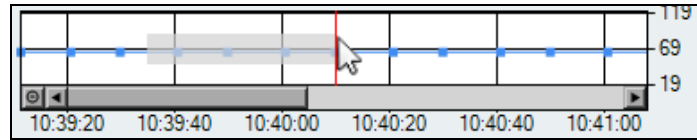
Once a new measured value is added, the section of the diagram will be moved to the right automatically. This allows the last of many measured values to be monitored in detail during measurement.

11.2.7 _Details of one measured value type_

Another program window is opened if you click on "Details" to the left of a diagram. The main measuring parameters are shown here, too, in a single-row table. Furthermore, the first and last times in this measurement and the total number of measured values are given.

In this case too, the measured data is displayed in a diagram, and clicking on the diagram places a cursor on the closest data point. The section of the diagram displayed can also be zoomed in on horizontally and vertically.

Furthermore, a limit can be entered underneath the diagram. A red, horizontal line appears in the diagram after confirming by pressing the "Enter" or "Return" key. This line is also displayed in the diagram of the measured value type in the main window. The limit entered is also saved in the measured data recording file and is displayed again when the file is opened. Deleting the limit removes the red line.
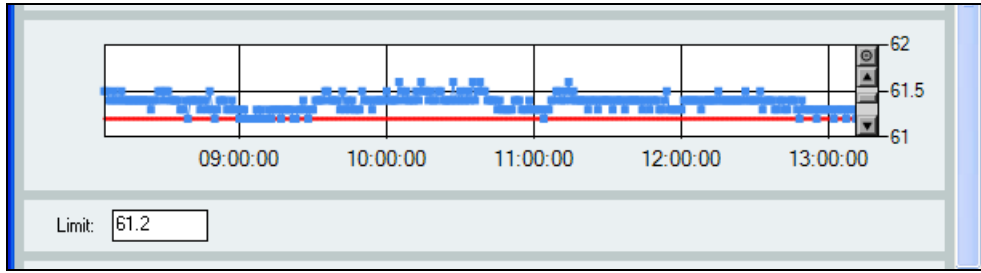
A selection can be made in the area below the field for the limit value for evaluating the measured values. The number of measured values for which the selection applies is given in a text field. The corresponding measured values and their respective measurement times are listed in the table below this area.

Similarly to the menu item in the main window, it is also possible to print from the window for evaluating the measured values (see the "Print" section).
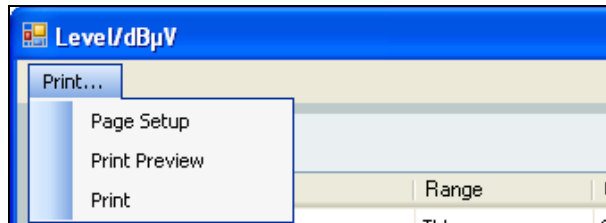
The entire contents of the table, depending on the selection made, will be printed out. If you want to print out only some of the rows of the table, the number of pages to be printed can be entered in the "Print" window.

Long-term Recording

Recall	State	Range	Channel	Frequency	Mode	Modulation	LNB	Symbol rate	Rec.Modif.	Sound carrier
17		TV	S 2	113.00	DVB-C	256QAM		6900		

Level/dBµV

11:04:03 : 61.2

Limit:61.2

Starting time:01/06/2011 08:05:06

End time:01/06/2011 13:11:05

Total number:307

Selection: Values below and equal to limit

Amount:21

Time	Level/dBµV
01/06/2011 08:39:05	61.2
01/06/2011 08:50:05	61.2
01/06/2011 09:00:03	61.2
01/06/2011 09:03:05	61.2
01/06/2011 09:04:05	61.2

The evaluation can be stopped by closing the window and can be carried out as often as needed, even during a measurement. However, during measurement, only data at the time the detailed view was opened will be included. New measured values will nevertheless continue to be handled in the main window.

11.3   File

The "File" dropdown menu is located on the far left of the menu bar.
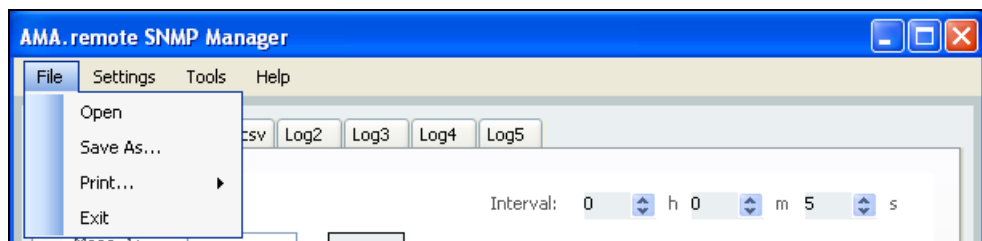
11.3.1 Open

The "Open" menu item activates the "Open" window. Up to five long-term measurement data recording files can be opened simultaneously. A recording file has the file extension ".csv". In order to open several files at once, select the files in the "Open" window by pressing the control or shift key and clicking the desired file names.

In the same way as during a measurement, each filename is displayed on its respective tab. The files from a measurement always have the same name and each has the ending "_mx", whereby the "x" stands for the number of the measurement, from one to five.

11.3.2 Save as

Clicking "Save as..." opens this window. The location and a filename can be entered here. The filename given is shown in the status bar.

Done. Up Time: 2017 | Save to file: 20110201
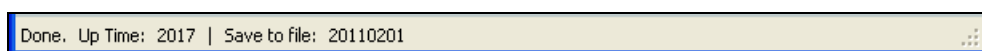
The suffix "_mx" is automatically added to the given filename for each measurement, where "x" stands for the number of the measurement. As already mentioned, the full filename for each measurement is displayed on its respective tab.

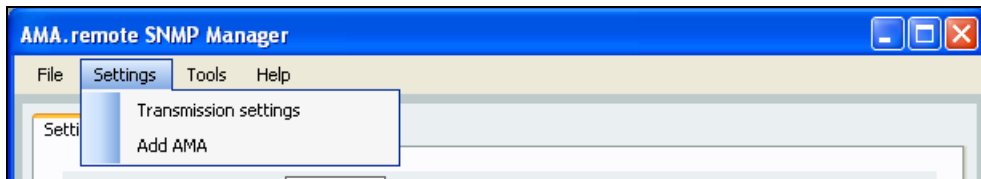| Settings	20110201_m1.csv	20110201_m2.csv	20110201_m3.csv	20110201_m4.csv	20110201_m5.csv
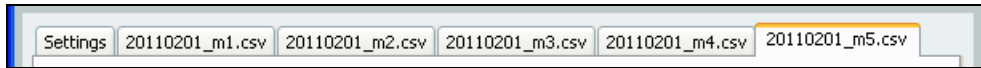
When needed, a recording file can be opened with a spreadsheet program. It may be necessary to specify "semicolon" as the separator when opening the file. The measuring parameters, measured value types and, if specified, limit values are displayed along with other data in the file header. The measured values and measurement times follow beneath. State "1" means "locked" and "0" means "unlocked".

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Recall	State	Range	Channel	Frequency	Mode	Modulation	LNB	Symbol rate	Rec.Modif.	Sound carrier
17		TV	S 2	113	DVB-C	256QAM		6900		

Time	Level/dBµV	SN/dB / MER/dB	Pre BER	PE	State
Limit:	61.2	35	1.00E-007	21	
01/06/2011 08:05:06	61.5	37.5	1.00E-008	0	1
01/06/2011 08:06:03	61.5	37.7	1.00E-008	0	1
01/06/2011 08:07:03	61.4	37.6	1.00E-008	0	1
01/06/2011 08:08:03	61.4	37.4	1.00E-008	0	1
01/06/2011 08:09:03	61.5	37.6	1.00E-008	0	1
01/06/2011 08:10:03	61.4	37.7	1.00E-008	0	1
01/06/2011 08:11:03	61.4	37.6	1.00E-008	0	1
01/06/2011 08:12:05	61.5	37.7	1.00E-008	0	1
01/06/2011 08:13:05	61.4	37.2	1.00E-008	0	1
01/06/2011 08:14:05	61.4	37.6	1.00E-008	0	1
01/06/2011 08:15:03	61.4	37.5	1.00E-008	0	1
01/06/2011 08:16:03	61.4	37.7	1.00E-008	0	1
01/06/2011 08:17:05	61.4	37.6	1.00E-008	0	1
01/06/2011 08:18:03	61.4	37.5	1.00E-008	0	1
01/06/2011 08:19:05	61.4	37.6	2.00E-008	0	1
01/06/2011 08:20:03	61.4	37.3	1.00E-008	0	1
01/06/2011 08:21:05	61.4	37.3	1.00E-008	0	1
01/06/2011 08:22:03	61.4	37.5	1.00E-008	0	1
01/06/2011 08:23:05	61.4	37.6	1.00E-008	0	1
01/06/2011 08:24:05	61.3	37.4	1.00E-008	0	1
01/06/2011 08:25:05	61.4	37.9	1.00E-008	0	1
01/06/2011 08:26:05	61.4	37.5	1.00E-008	0	1
01/06/2011 08:27:03	61.5	37.6	1.00E-008	0	1
01/06/2011 08:28:05	61.5	37.5	1.00E-008	0	1
01/06/2011 08:29:05	61.4	37.5	1.00E-008	0	1
01/06/2011 08:30:05	61.5	37.6	1.00E-008	0	1
01/06/2011 08:31:03	61.5	37.7	1.00E-008	0	1
01/06/2011 08:32:05	61.4	37.5	1.00E-008	121	1
01/06/2011 08:33:05	61.4	37.7	1.00E-008	125	1

11.4   Settings

The "Settings" dropdown menu can be activated using the menu bar. Setting options for data transmission are summarized here.

AMA.remote SNMP Manager

File | Settings | Tools | Help

Transmission settings
Add AMA

The submenu items correspond to those in the "Remote control" view; refer to the "Settings" subsection in "The remote control application area" section.