R&S®InstrumentView
Software Manual

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ROHDE&SCHWARZ

The software manual describes the following:

- R&S®InstrumentView

The R&S®InstrumentView supports the following product series:

- R&S®FPH
- R&S®ZPH
- R&S®FPC
- R&S®FSH4
- R&S®ZVH
- R&S®FSC

The contents of this manual correspond to software version 1.60 or higher.

The software contained in this product uses several valuable open source software packages. For information, see the "Open Source Acknowledgment" document, which is available for download from the R&S InstrumentView product page at i.e. http://www.rohde-schwarz.com/product/FPH > "Downloads" > "Software".
Rohde & Schwarz would like to thank the open source community for their valuable contribution to embedded computing.

© 2017 Rohde & Schwarz GmbH & Co. KG
Mühldorfstr. 15, 81671 München, Germany
Phone: +49 89 41 29 - 0
Fax: +49 89 41 29 12 164
Email: info@rohde-schwarz.com
Internet: www.rohde-schwarz.com
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Europe, Africa, Middle East

Phone +49 89 4129 12345
customersupport@rohde-schwarz.com

North America

Phone 1-888-TEST-RSA (1-888-837-8772)
customer.support@rsa.rohde-schwarz.com

Latin America

Phone +1-410-910-7988
customersupport.la@rohde-schwarz.com

Asia/Pacific

Phone +65 65 13 04 88
customersupport.asia@rohde-schwarz.com

China

Phone +86-800-810-8228 /
+86-400-650-5896
customersupport.china@rohde-schwarz.com

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1 Installing R&S InstrumentView

Installing the R&S InstrumentView software

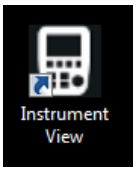
The R&S InstrumentView allows you to remotely control the instrument via LAN or USB interface. It is an application software which provides printing service, customize report generation and editorial functions on the different datasets used in the instrument. The R&S InstrumentView also provides post-processing features to edit the markers position on the trace measurements.

The R&S InstrumentView supports a wide range of spectrum analyzer, i.e. R&S FSH4, R&S FSC, R&S ZVH, R&S FPH, R&S ZPH and R&S FPC.

The setup program installs the R&S InstrumentView software on PC's running Windows 7, 8 and 10.

To install the software, download the latest software installer from the individual spectrum analyzer product homepage, i.e. www.rohde-schwarz.com/product/fph.

Running the R&S InstrumentView software



There are a few ways to start the R&S InstrumentView software:

- Double-click the R&S InstrumentView icon on the desktop of the PC.
- Go to "Start", select "All Programs > Rohde-Schwarz > Instrument View" and click the application icon .

About the software information

To display the software information for R&S InstrumentView, select the "About" menu item in the "Options" menu. See Figure 1-1.

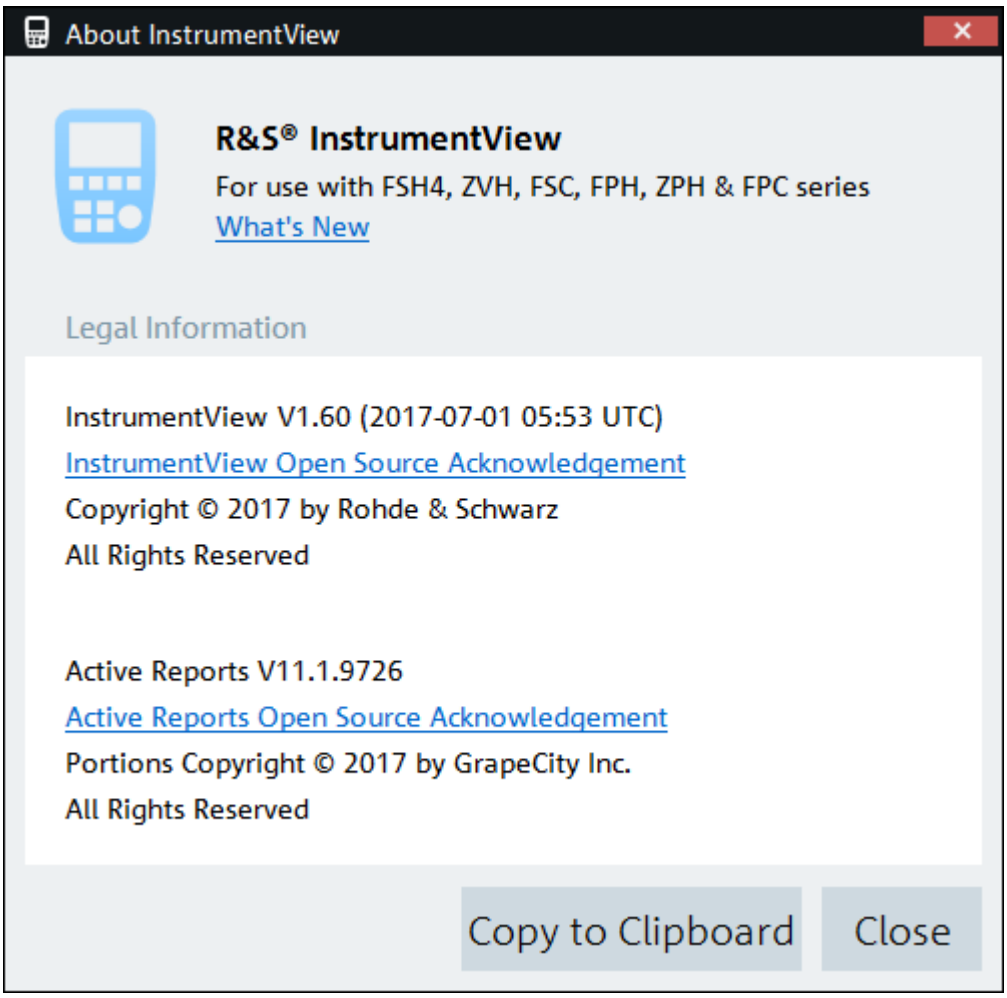


Figure 1-1: About R&S InstrumentView

2 R&S InstrumentView Screen Layout

Context Menu

Right-click on the trace measurement window, horizontal scrollbar or vertical scrollbar to access the following menus:

Trace measurement window

- Reset Zoom, Reset Move - Reset to original zoom level or moved position
- Copy Graphics - Copy the selected trace from the trace window to the clipboard
- Copy Data - Copy the instrument setup and trace data from the trace window to the clipboard
- Copy Active Sweep - Copy the selected trace from the trace window. When a trace is selected, the corresponding grid color on the Y-axis changed accordingly.
- Paste Sweep - Paste the selected trace into the trace window
- Delete Active Sweep - Delete the selected trace from the trace window. When a trace is selected, the corresponding grid color on the Y-axis changed accordingly.
- View Display Line - A useful feature to visibly show the display line level
- View Grid - Enable or disable the display of grid line on the trace window

Horizontal scrollbar

- "Scroll Here" - Navigate to the cursor position
- "Left Edge", "Right Edge" - Navigate to the extreme left or right of the scrollbar position
- "Page Left", "Page Right" - Page left or right on the scrollbar position
- "Scroll Left", "Scroll Right" - Navigate left or right on the scrollbar position

Vertical scrollbar

- "Scroll Here" - Navigate to the cursor position
- "Top", "Bottom" - Navigate to the top or bottom of the scrollbar position
- "Page Up", "Page Down" - Page up or down on the scrollbar position
- "Scroll Up", "Scroll Down" - Navigate up or down on the scrollbar position

The following illustrates the display of the R&S InstrumentView screen layout.

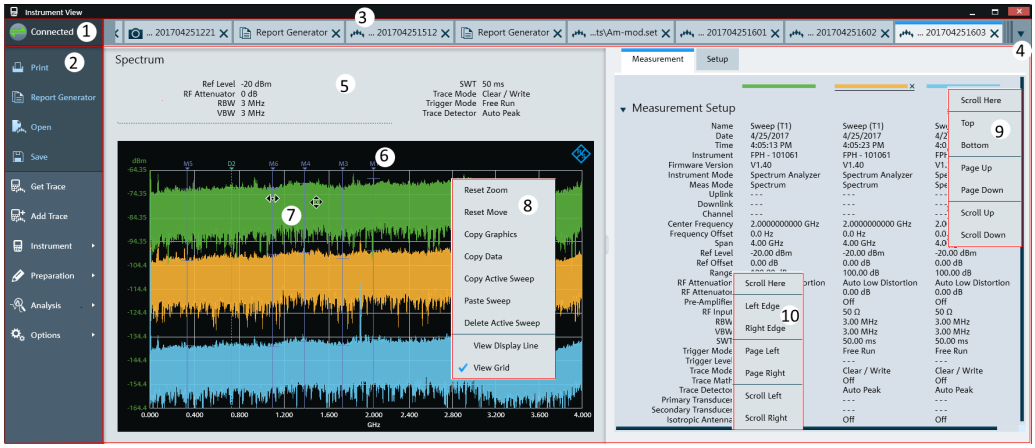


Figure 2-1: R&S InstrumentView screen layout

1 = Connection manager menu
2 = R&S InstrumentView menu
3 = Tab header bar
4 = Drop-down box to show hidden tabs in the Tab header bar
5 = Display dialog box associated with the selected tab in the Tab header bar
6 = Trace measurement of the selected tab
7 = Mouse menu option. See details in Table 4-6.
8 = Context menu for trace measurement window
9 = Context menu for vertical scrollbar
10 = Context menu for horizontal scrollbar

Table 2-1: R&S InstrumentView menu

R&S InstrumentView functions	Descriptions
Print	Print and display the print preview of the trace measurements. See Chapter 4.1, "Printing Trace Windows", on page 15.
Report Generator	Customize the report generation for the trace measurement results. See Chapter 4.2, "Customizing Test Report", on page 17.
Save	Save the trace measurements and dataset. See Chapter 4.3, "Save Instrument", on page 21.
Get Trace	Get a trace measurement from the connected instrument. See Chapter 4.4.1, "Get Trace", on page 22.
Add Trace	Add a trace measurement from the connected instrument to the existing trace measurement. See Chapter 4.4.2, "Add Trace", on page 26.
Open Trace	Open an existing trace measurement from the PC. See Chapter 4.4.3, "Open Trace", on page 27.

R&S InstrumentView functions	Descriptions
Instrument	Remote display and control of the instrument from PC. See Chapter 4.5.1, "Remote Display", on page 28. Provide a snapshot of all connected devices. See Chapter 4.5.2, "Lab Display", on page 32. File transfer between the instrument and PC. See Chapter 4.5.3, "File Transfer", on page 32. Synchronizing files between instrument and PC. See Chapter 4.5.4, "Synchronization", on page 35. Multiple transfer of trace measurements from the instrument to PC. See Chapter 4.5.5, "Multi-Transfer", on page 37. Capture a screenshot from the instrument. See Chapter 4.5.6, "Screenshot", on page 41 Date time synchronization. See Chapter 4.5.7, "Date Time Synchronization", on page 42. Save current active instrument dataset. See Chapter 4.5.8, "Save Active Dataset", on page 42. Activate dataset from PC to instrument. See Chapter 4.5.9, "Activate Dataset to Instrument", on page 42.
Preparation	Edit the different datasets supported by the instrument family. See Chapter 4.6, "Working with Instrument Datasets", on page 44.
Analysis	Provide post data analysis for spectrogram and map analysis. Provide GPX conversion to KMZ and CSV file format. See Chapter 4.6.11, "Map Creator", on page 65.
Options	Provide color settings on the different elements in trace window. Configure the local directory settings for the different types of files used in the application. Provide setting to enable the retrieve of full dataset from instrument. Display the keyboard shortcuts key. Display the application software information. See Chapter 4.8, "Options", on page 75.

Tab header bar

After the PC is successfully connected to the instrument, new tabs appear in the "Tab header bar" when a menu item is selected from the R&S InstrumentView menu.

Tab selected for usage is highlighted with a horizontal blue line in the tab. See an example in Figure 2-2.

Figure 2-2: Selected tab

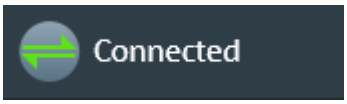
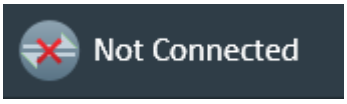
3 Connecting the Instrument

The InstrumentView software communicates with your instrument via USB or Ethernet (LAN).

You can select the type of connection using the connection manager menu at the top right-hand corner of the screen layout. See Figure 2-1.

The connection manager menu also displays the instrument connection status.

Table 3-1: Connection status

Connection status	Description
 menu	One or more instruments are connected withe the PC
	No instrument is connected with the PC

3.1 Connection Manager Menu

Context Menu

Right-click in the connection manager list to access the following menus:

- "Connection All" - Connect all the listed instruments in the connection manager list
- "Connection Selection" - Connect only the selected instrument in the connection manager list
- "Disconnection All" - Disconnect all the listed instruments in the connection manager list
- "Disconnection Selection" - Disconnect only the selected instrument in the connection manager list

The "Connection Manager" menu configures the remote connection between the PC and the instrument.

Depending on the connection status icon , you can connect or disconnect the instrument from the connection manager list.

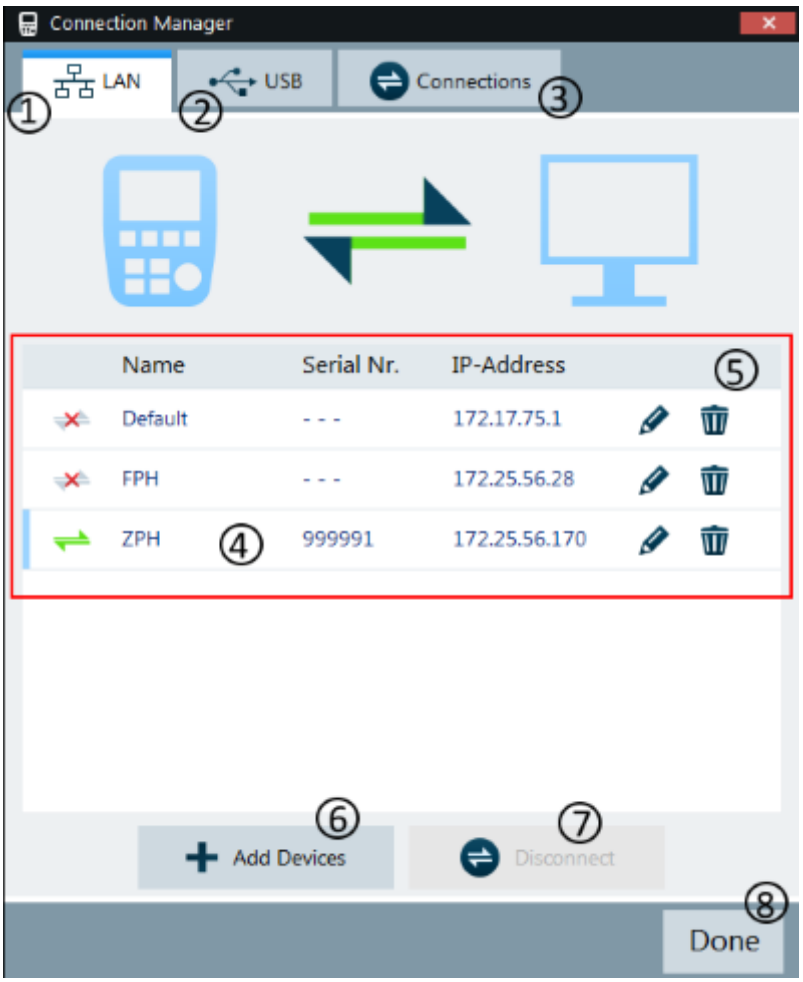


Figure 3-1: Connection manager menu

1 = LAN connection tab
2 = USB connection tab
3 = List of connections tab
4 = Selected instrument
5 = Connection manager list for LAN connection
6 = Press "Add Devices" button to configure a new instrument
7 = Press "Disconnect" / "Connect" button to connect or disconnect instruments from the connection manager list
8 = Press "Done" button to exit the "Connection Manager" dialog box

LAN connection

During the initial startup, the "IP-Address" field is set to default "172.17.75.1". The IP address can be edited using the icon .

To add a new instrument for LAN connection, press the "Add Devices" button.

Using the icon, you can check the available network adapter connected on the PC.

Once the list is set up with a desired "Name" and "IP address", press "OK" button to add the new instrument to the connection manager list.

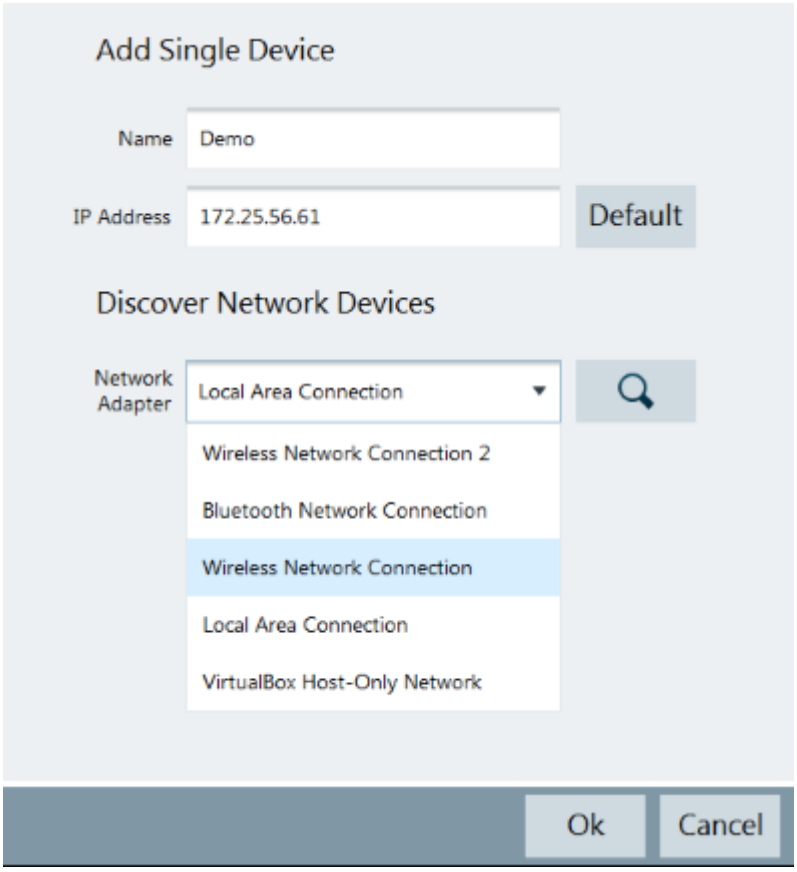


Figure 3-2: Device connection information

USB connection

When the instrument is connected to the PC for the first time, Windows tries to install the new hardware automatically. The required drivers are installed along with the R&S InstrumentView software package.

When the drivers have been found on your system and the hardware has been successfully installed, Windows shows a corresponding message.

There is only one USB instance in the connection manager list. See Figure 3-3.

Depending on the connection status icon , you can connect or disconnect an instrument from the connection manager list.

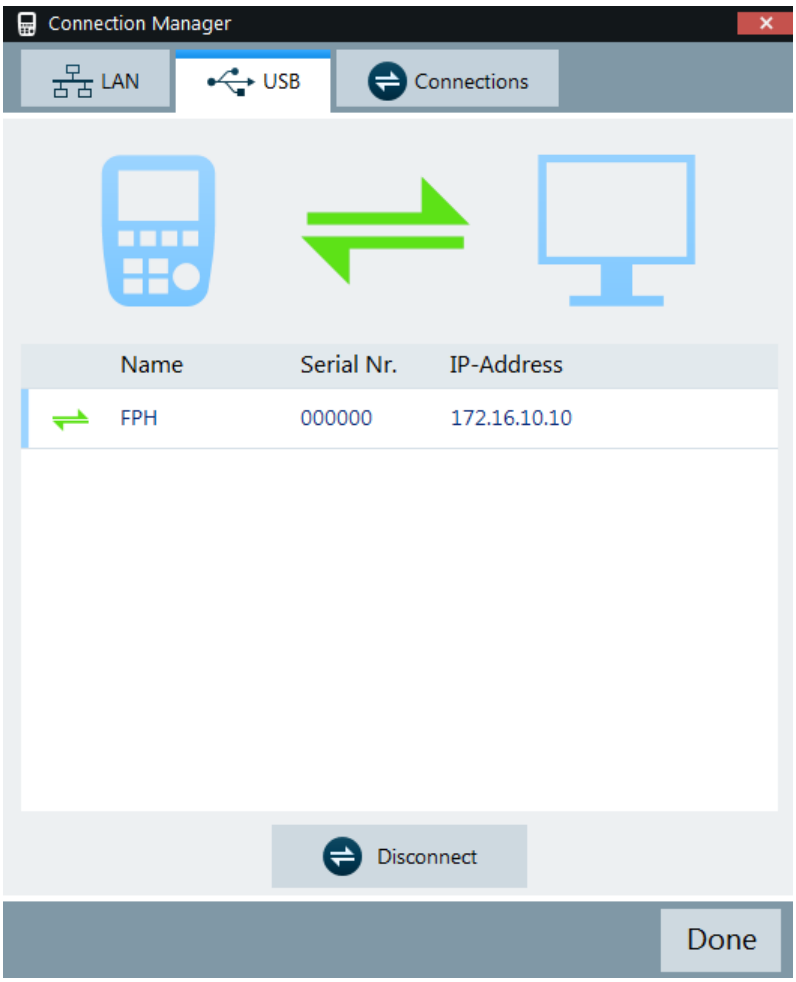


Figure 3-3: USB connection

List of connections

Only one USB connection instance is supported at any time.

To view a list of instruments connected to the PC, select the "Connections" tab on the "Connection Manager" dialog box.

The connection status is displayed accordingly to the type of connection established between the PC and instrument, e.g. USB , LAN .

Depending on the connection status icon , you can connect or disconnect an instrument from the connection manager list.

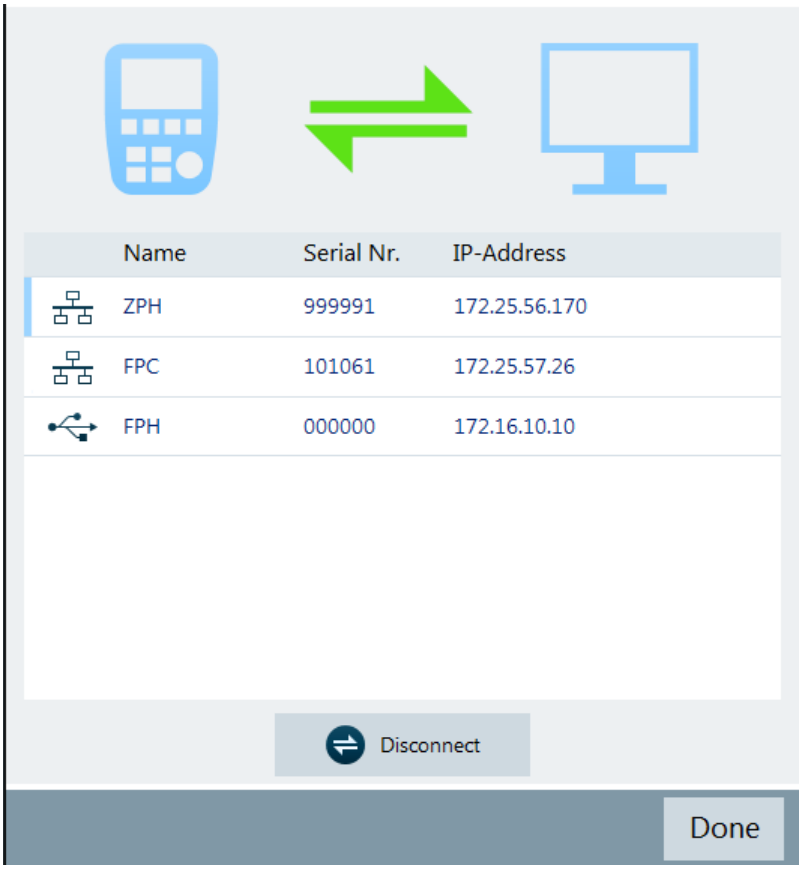


Figure 3-4: List of connected devices

4 Using R&S InstrumentView

The following chapters illustrate the functionality of the R&S InstrumentView in details.

4.1 Printing Trace Windows

Context Menu

Right-click in the print preview window to access the following menus:

- "Increase Zoom" - Zoom in on the print preview details
- "Decrease Zoom" - Zoom out on the print preview details

Dual Trace

The dual trace feature is supported in the R&S ZPH product series only.

Each trace contains its own marker set values.

Print

The "Print" menu allows you to print the trace measurements currently loaded in the R&S InstrumentView. It also displays the print preview window on the printed output.

Arrangement of the printing sequence is possible by dragging the trace measurement window in the "Selection" section. See Figure 4-1.

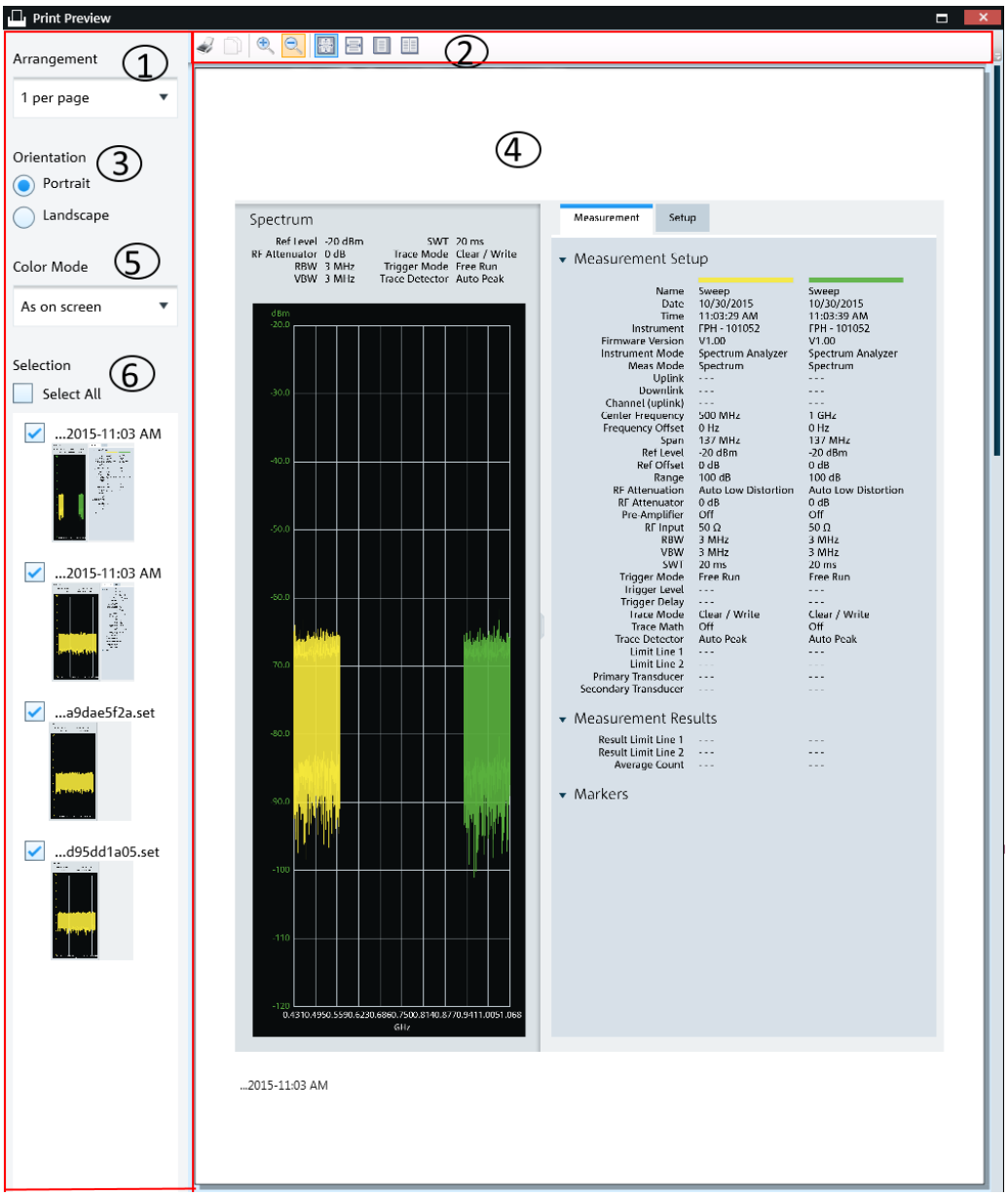


Figure 4-1: Print dialog

1 = Arrangement of the number of trace measurement windows per page (1, 2, 4, 6, 16 per page)
2 = Print preview tool
3 = Orientation on the printed output
4 = Preview window
5 = "Color mode" defines the window background color as black or white
6 = "Selection" displays the printed order of the trace measurement windows

Table 4-1: Print preview tools

Print preview tools	Descriptions
Print or (Ctrl+P)	Print the preview output.
Copy (Ctrl+C)	This action is not available.
Zoom in (Ctrl+)	Zoom in the preview details.
Zoom out (Ctrl-)	Zoom out the preview details.
100% (Ctrl+1)	Preview the actual print size of the trace measurement window.
Page width (Ctrl+2)	Preview the whole width size of the trace measurement window.
Whole page (Ctrl+3)	Preview a single page of the trace measurement result in the preview window.
Two pages (Ctr+4)	Preview two pages of trace measurement results on the same row in the preview window.

4.2 Customizing Test Report

The "Report Generator" menu allows you to select logo, report output format and language and selectively display measurements parameters to customize the test report. See Figure 4-2.

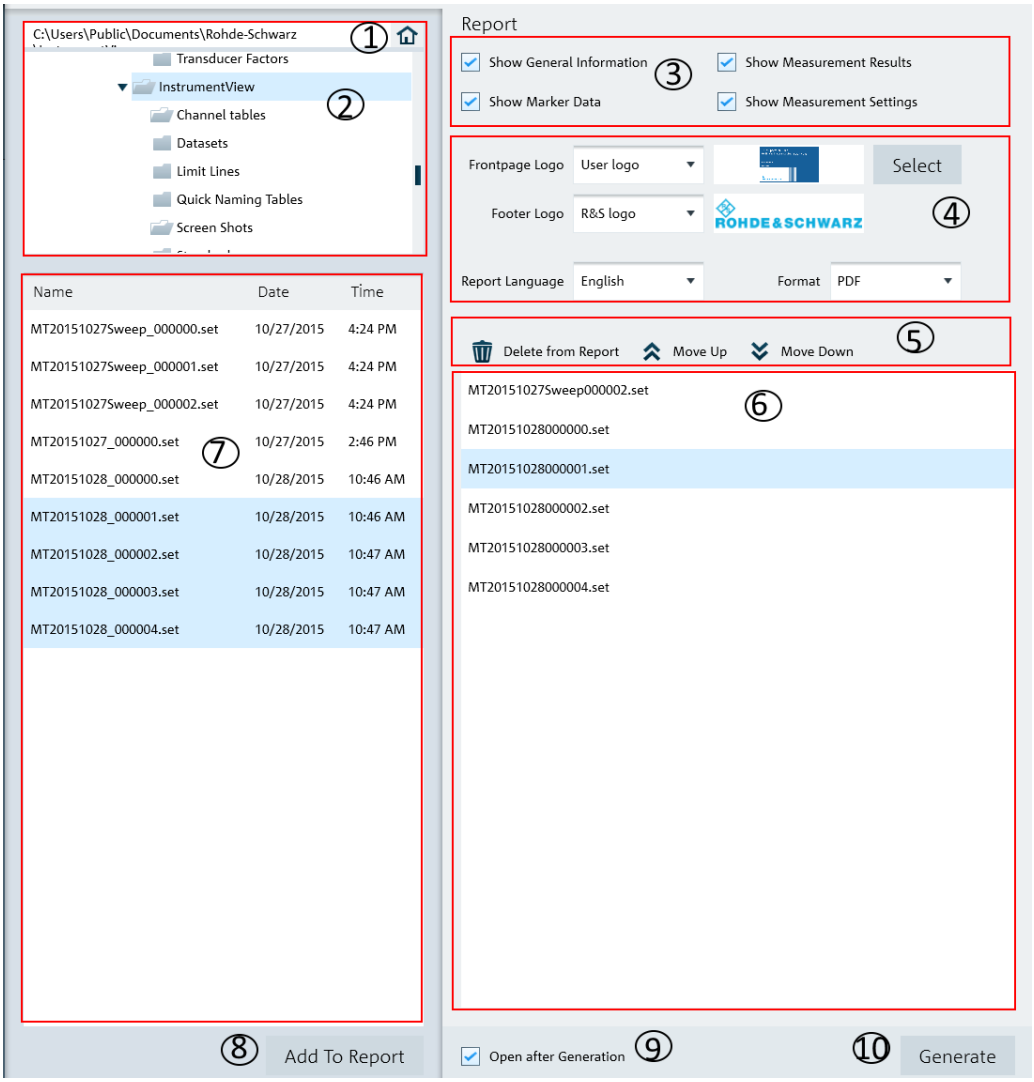


Figure 4-2: Report generation dialog

1 = Homepage
2 = Folder directories in the PC
3 = Report parameters
4 = User customization for logo and report language and format (PDF, HTML, RTF)
5 = Report tools
6 = Report generation window
7 = List of datasets of the selected folder in the PC.
8 = "Add To Report" button transfers the selected dataset into the report generation window
9 = Activate "Open after Generation" checkbox to open the file after report generation
10 = Activate "Generate" button to generate the report

Table 4-2: Report tools

Report tools	Descriptions
"Delete from Report"	Delete the selected dataset from the report generation window.
"Move Up"	Move forward the selected dataset sequence in the report generation window.
"Move Down"	Move backward the selected dataset sequence in the report generation window.

Report parameters

The following shows a snapshot of the report generated. See Figure 4-3.

It shows the details parameters in the "General Information", "Measurement Results" and "Measurement Settings" section. These details parameters are configurable for report generation. See index 3 of Figure 4-2.

General Information

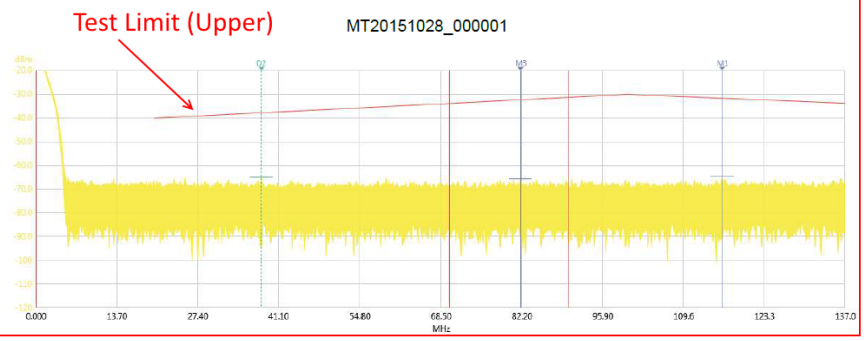
Instrument and Measurement Information

Instrument: FPH - 101052

Test Results

Overall Result	Data Set Name	Result
10/27/2015 4:24:46 PM	MT20151027Sweep_000002.set	Pass
10/28/2015 10:46:47 AM	MT20151028_000000.set	Pass
10/28/2015 10:46:57 AM	MT20151028_000001.set	Pass
10/28/2015 10:47:07 AM	MT20151028_000002.set	Pass
10/28/2015 10:47:17 AM	MT20151028_000003.set	Pass
10/28/2015 10:47:27 AM	MT20151028_000004.set	Pass

Measurement Results



Name	Position	Value
M1	116.1605634 MHz	-64.42 dBm
D2	-77.9549296 MHz	-0.43 dB
M3	82.0070423 MHz	-65.63 dBm

Limit Line Results	Result
Test Limit (Upper)	PASS

Measurement Settings

Mode	Spectrum Analyzer	Span:	137 MHz
Center:	68.5 MHz	VBW:	3 MHz
RBW:	3 MHz	Attenuator:	0 dB
Sweep Time:	20 ms	Range:	100 dB
Reference:	-20 dBm		

Trace Settings

Trace Mode:	Clear / Write	Detector:	Auto Peak

Figure 4-3: Test report generated

4.3 Save Instrument

Depending on the types of dataset or trace windows (e.g. screenshot) that the R&S InstrumentView is working with, the "Save" function saves the files in their respective file format. See Table 4-3.

Table 4-3: File format

Description	File format
Primary transducer factor, secondary transducer factor and isotropic transducer factor. See Chapter 4.6.1, "Using Transducers", on page 44.	`*.pritrd, *.sectrd, *.isotrd`
Cable models See Chapter 4.6.2, "Using Cable Models", on page 46.	`*.cblmod`
Calibration kit See Chapter 4.6.3, "Calibration Kits", on page 48.	`*.ckit`
Relative limit line and absolute limit line See Chapter 4.6.4, "Using Limit Lines", on page 48.	`*.relli, *.absli`
Channel table. See Chapter 4.6.5, "Using Channel Table", on page 50.	`*.chnta`
Standards table. See Chapter 4.6.6, "Using Standards", on page 52.	`*.semst, *.chpst, *.obwst, *.tdmst`
Quick name table See Chapter 4.6.7, "Using Quick Name Table", on page 56.	`*.qnt`
Ama limits. See Chapter 4.6.8, "Using Analog Modulation Analysis AM Limits", on page 57 and Chapter 4.6.9, "Using Analog Modulation Analysis FM Limits", on page 59.	`*.aamlim, *.fmlim`
Datasets. See Chapter 4.5.8, "Save Active Dataset", on page 42 and Chapter 4.5.9, "Activate Dataset to Instrument", on page 42.	`*.set, *xset, *cset`
Screenshot. See Chapter 4.5.6, "Screenshot", on page 41.	`*.png, *.bmp, jpg, *.gif`
Trace measurement with setup configuration details. See Chapter 4.4, "Working with Trace Windows", on page 22.	`*.set`
Measurement wizard set. See Chapter 4.6.10, "Wizard Set Editor", on page 60	`*.mdf, xmdf`

Description	File format
Map data See Chapter 4.6.11, "Map Creator", on page 65.	*.idm, *prj, *.gpx
Spectrogram See Chapter 4.7.1, "Spectrogram", on page 67.	*.spm
CSV instrument file reconstruction supports: Transducer , Cable Model, Channel Table, Limit Line, AMA AM Limit, AMA FM Limit and Standard	*.csv

4.4 Working with Trace Windows

The following illustrates the way how you can work with the trace measurements in R&S InstrumentView.

4.4.1 Get Trace

Context Menu
See details of the context menu in Chapter 2, "R&S InstrumentView Screen Layout", on page 7.

The "Get Trace" menu allows you to capture the current trace measurement from the instrument and display it in the trace window. A new tab is formed in the "Tab header bar" for every new trace captured from the instrument. See index 1 in Figure 4-4.

Each trace measurement result consists of two tabs:

- "Measurement"
  - "Measurement Setup"
    Details of the instrument measurement settings. See user manual of the respective instrument for details of measurement settings.
  - "Measurement Results" (if any)
    Pass/Fail result of the limit test.
    See index 6 and 7 in Figure 4-4.
  - "Markers" (if any)
    Setting of the markers position.
- "Setup"
  Trace measurement details captured from the instrument are displayed in the "Setup" tab. You can edit existing setup information or add on additional setup information on the selected trace measurement.
  See index 3 in Figure 4-4.
  See "Trace Setup" on page 24.
  See "Marker Setup" on page 25.

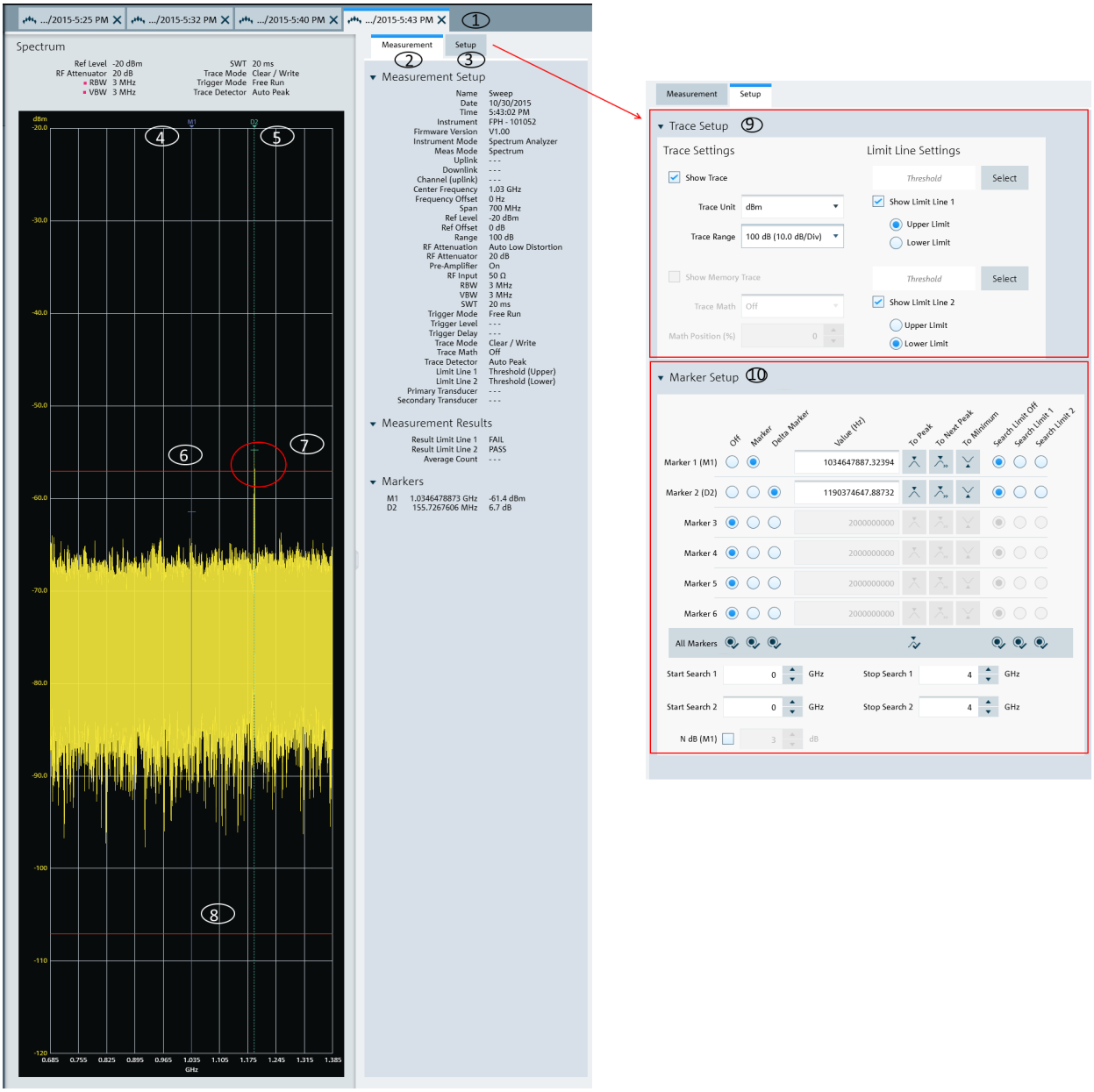


Figure 4-4: Trace measurement window

1 = Tab header bar
2 = "Measurement" tab
3 = "Setup" tab
4 = Marker position
5 = Delta marker position
6 = Upper limit of limit line 1
7 = Display show that result failed limit line 1
8 = Lower limit of limit line 2
9 = Trace Setup
10 = Marker Setup

Trace Setup

The "Trace Setup" dialog is divided into three different settings: trace setup, memory trace and limit line settings.

- Each trace is represented with a different trace color. If there is more than one trace in the same trace window, you can go to the individual trace tab to disable or enable the "Show Trace" checkbox to set the trace display. See Figure 4-5.
  The "Trace Unit" ("dBm", "dBmV", "dµV", "V", "W") and "Trace Range" ("150 dB (15.0 dB/Div)", "130 dB (13.0 dB/Div)", "120 dB (12.0 dB/Div)", "100 dB (10.0 dB/Div)", "50 dB (5.0 dB/Div)", "30 dB (3.0 dB/Div)", "20 dB (2.0 dB/Div)", "10 dB (1.0 dB/Div)", "5 dB (0.5 dB/Div)", "3 dB (0.3 dB/Div)","2 dB (0.2 dB/Div)", "1 dB (0.1 dB/Div)", "Linear 0-100%") are selectable.
- The "Show Memory Trace" is only enabled if the trace measurement captured from the instrument contains the memory trace information. With the memory trace, you can apply "Trace Math" method ("Trace - Memory", "Memory - Trace") between the trace and memory and see the result on the trace window.
  The "Math Position" shifts the trace resulted from "Trace Math" to the position defined in the entry box.
  For more information on the memory trace, see the respective instrument user manual.
- The "Limit Line Settings" provides two sets of limit line that you can apply on the trace window. Each set of the limit line provides the selection to apply it as "Upper Limit" or "Lower Limit". The test result of the limit line is displayed in the "Measurement" tab. See index 2 in Figure 4-4.
  Click "Select" to select the desired limit line from the "Limit Lines" folder directory in the PC. See Chapter 4.8.2, "Directory Settings", on page 77. You can enable or disable the display of the limit line using the "Show Limit Line 1" or "Show Limit Line 2" checkbox.

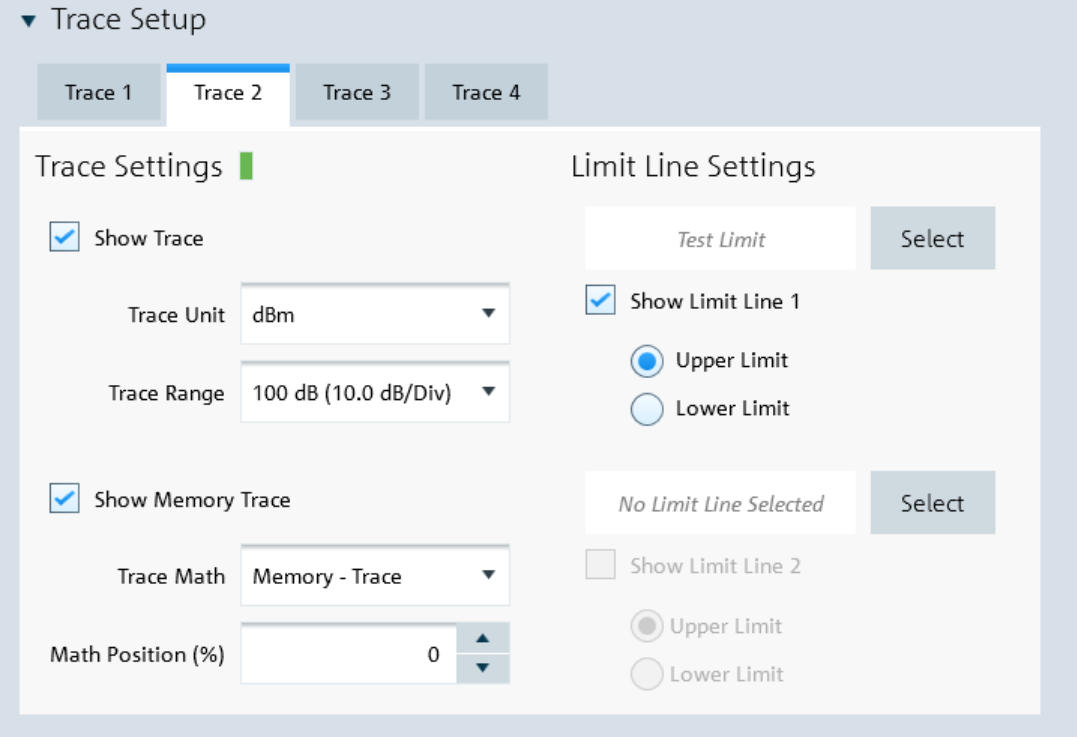


Figure 4-5: Trace setup

Marker Setup

The "Marker Setup" allows you to label the trace measurement with up to six different markers. For more information on marker details, see the respective instrument user manual.

The first marker is always set as "M1" with the rest labeled as marker (M2, M3, M4, M5, M6) or delta marker (D2, D3, D4, D5, D6). See Figure 4-6.

The marker value can be individually positioned in the following ways:

- Value (Hz)
  Key in the desired frequency value in the entry box.
- "To Peak", "To Next Peak", "To Minimum"
  Auto-positioning of the marker value by selecting the peak, next peak or minimum value across the span width of the trace measurement.
- Auto positioning of marker value ("To Peak", "To Next Peak", "To Minimum") in the area defined by the search limit ("Search Limit 1" or "Search Limit 2").
  The "Start Search 1", "Start Search 2", "Stop Search 1" and "Stop Search 2" defined the search start and stop limit.
  You can also find the auto positioning of the marker value using the "N dB (M1)". This search function is only restricted to "M1"
- "All Markers"
  This section is used to synchronize the criteria of all the marker positions.

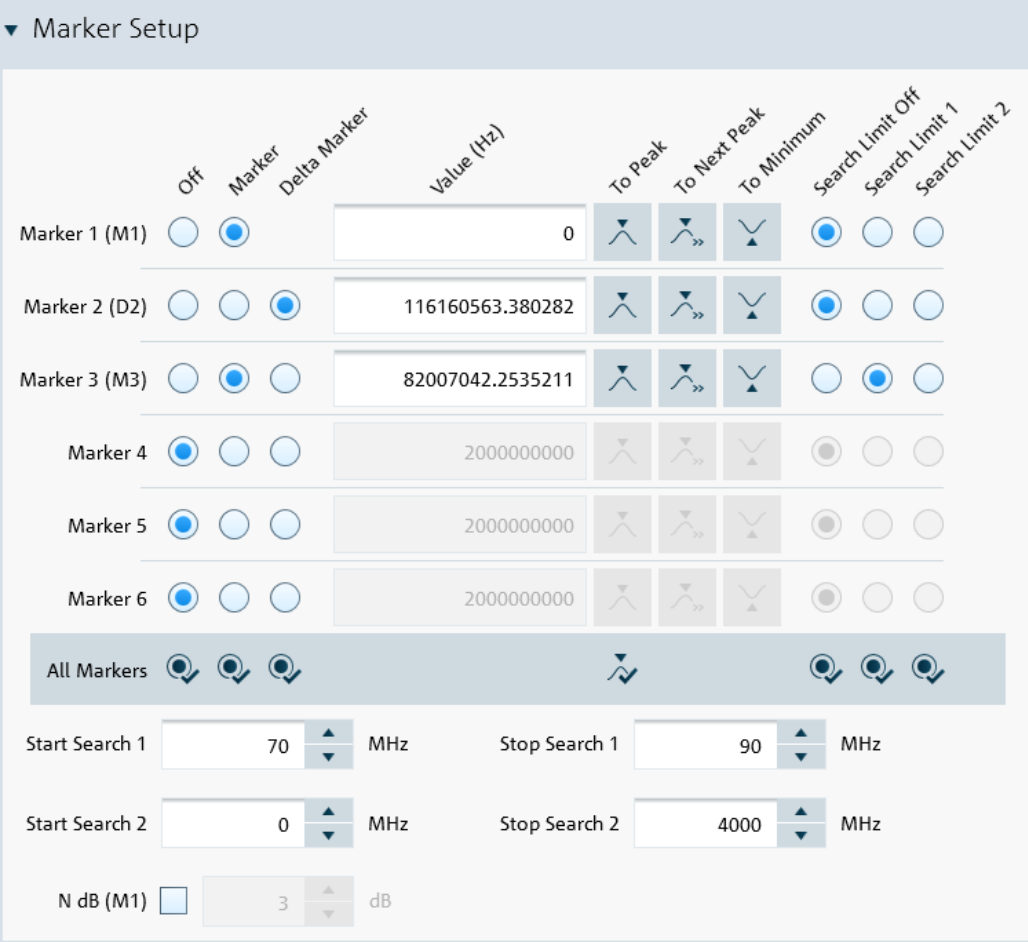


Figure 4-6: Marker setup

4.4.2 Add Trace

The "Add Trace" is not applicable for R&S ZPH product series.

Add Trace

The "Add Trace" menu allows you to add additional trace measurement captured from the instrument to an existing trace measurement displayed in the trace window. Each trace is represented with a different trace color. See Figure 4-7.

See details of "Measurement" tab in index 2 of Figure 4-4.

See details of "Setup" tab in index 3 of Figure 4-4.

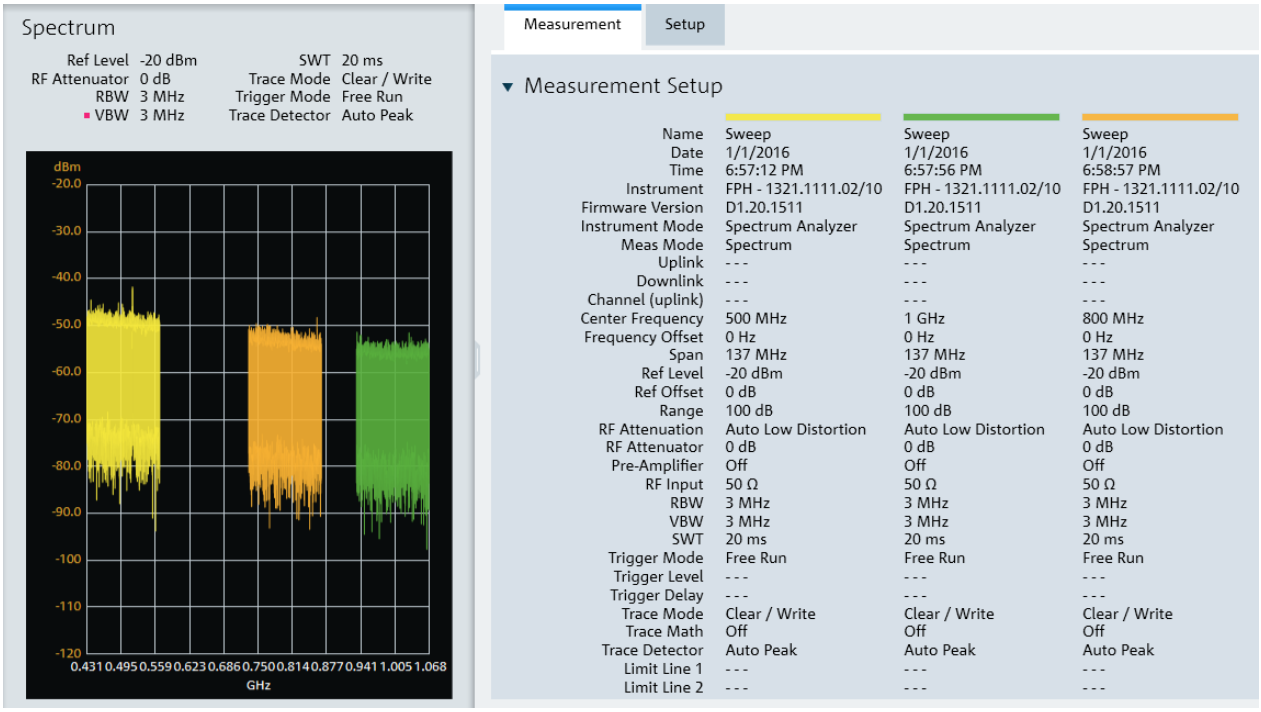


Figure 4-7: Add a trace to an existing trace measurement

4.4.3 Open Trace

Context Menu

See details of the context menu in Chapter 2, "R&S InstrumentView Screen Layout", on page 7.

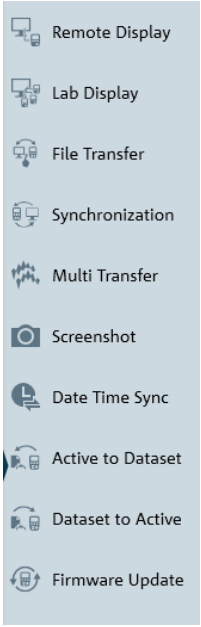
Open Trace

The "Open Trace" menu allows you to open the existing trace measurements from the PC and displayed it in the trace window. A new tab is formed in the "Tab header bar" for each trace opened from the PC. See index 1 in Figure 4-4.

See details of "Measurement" tab in index 2 of Figure 4-4.

See details of "Setup" tab in index 3 of Figure 4-4.

4.5 Working with Instrument



The "Instrument" menu provides the following functions:

- Remote display and control of the instrument
- Snapshot display of all connected instrument
- Files transfer between instrument and PC
- File synchronization between instrument and PC
- Multiple updates of screenshot from instrument to PC
- Screenshot captured from the instrument
- Date and time synchronization between instrument and PC
- Save a dataset from the instrument to PC
- Activate a dataset from PC to instrument
- Firmware update

4.5.1 Remote Display

The "Remote Display" provides the remote display and control of the instrument. You can remotely control and display the instrument via the softkey and hardkey function displayed. See Figure 4-8.

See the respective instrument user manual for details of each of the softkey and hardkey functions.

Note: Click the left side of the rotary knob to decrease entry value and right side of the rotary knob to increase entry value. Click the center of the rotary knob to confirm the entry value.

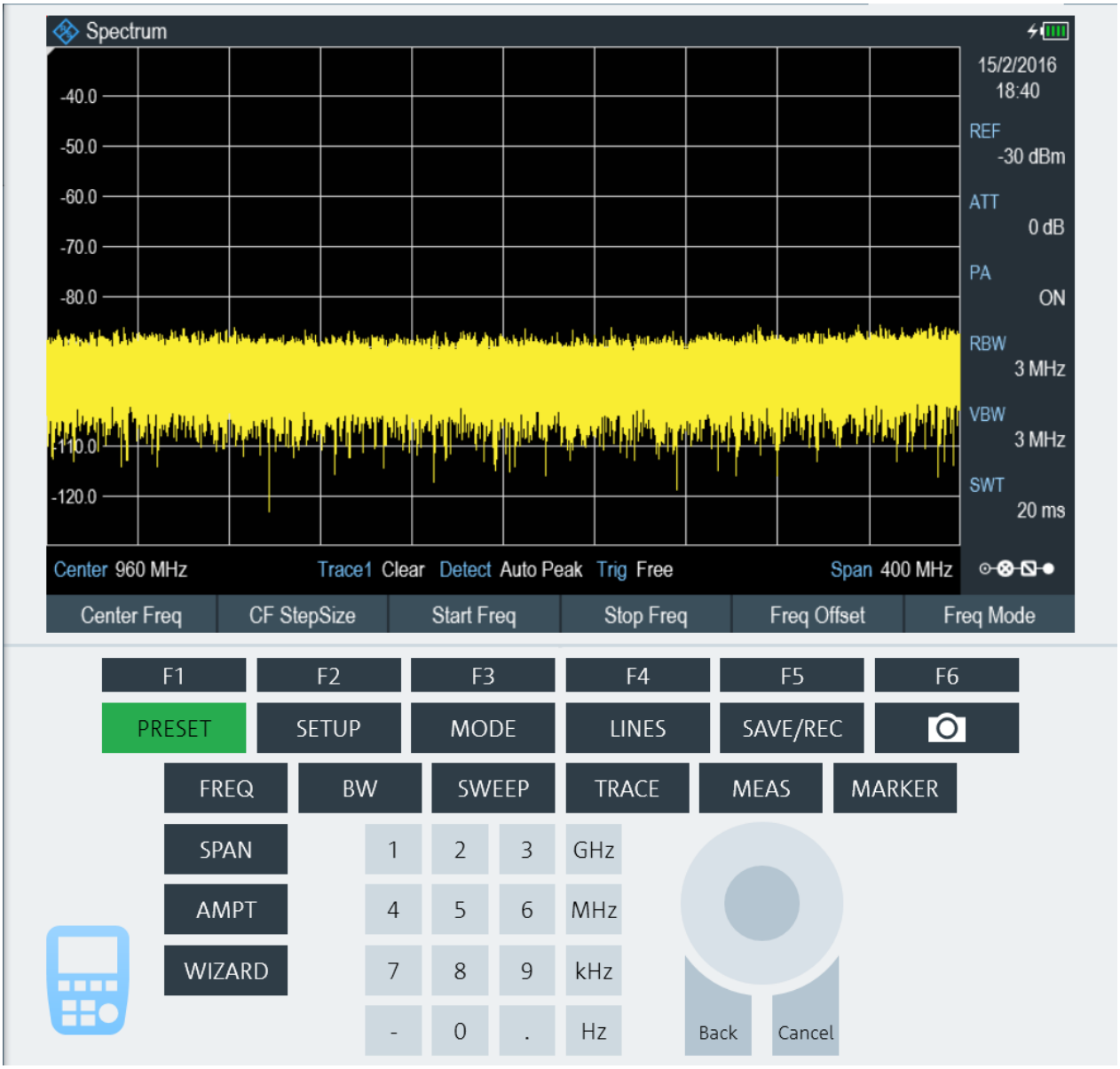
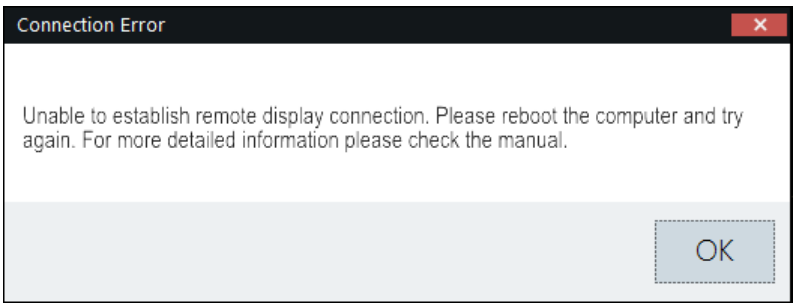


Figure 4-8: Remote display of the instrument

4.5.1.1 Remote Display with Troubleshooting

When establishing a remote connection with the instrument, a message "Establishing Remote Connection..." is displayed. When there is a connection failure, the "Connection Error" popup message is displayed. The timeout for connection error is 30 seconds.



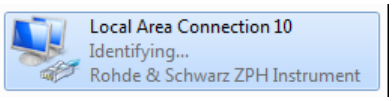
There are two possibilities for a connection failure:

USB device not initialized

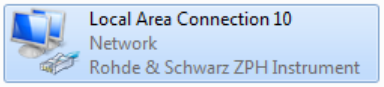
The virtual network adapter for the USB device has not yet initialized after plugging in the USB cable. This process takes at least 10 seconds and it varies per PC setup.

You can view the status of the USB device under "Control Panel\Network and Internet \Network Connections" settings in the PC operating system.

- USB device not ready

- USB device ready

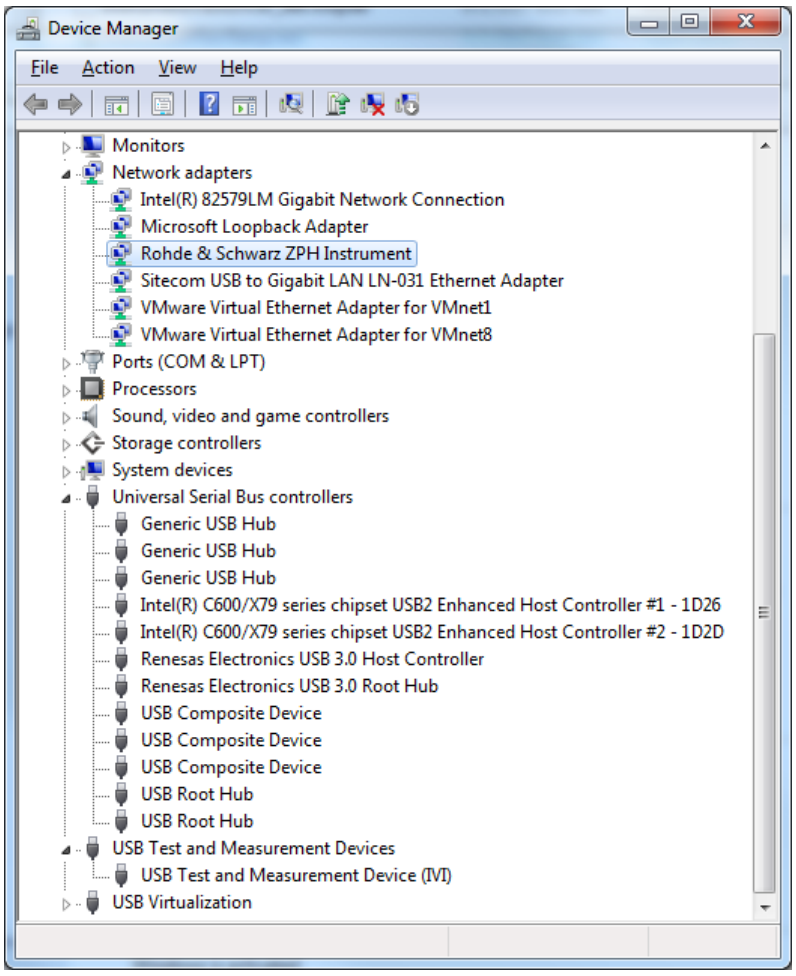
  

RNDIS drivers not properly installed

You can verify the RNDIS drivers status in two ways:

- Under "Control Panel\Programs\Programs and Features" settings:
  The R&S InstrumentView RNDIS Driver (32-Bit or 64-bit) and Windows Driver Package - Rohde & Schwarz ESNA installments must be present.

- Under "Control Panel\System and Security\System -> Device Manager" settings:
  For FPH/ZPH/FPC, it should contain the following three devices:
  - USB Composite Device *with VID_0AAD*
  - USB Test and Measurement Device (IVI) *with VID_0AAD*
  - Network adapter with the name Rohde & Schwarz <device type> Instrument.
    The highlighted "Rohde & Schwarz ZPH Instrument" network adapter would not show up in case the RNDIS driver is not correctly installed on the PC.



If connection failure still persists, it is recommended to uninstall and reinstall the R&S InstrumentView software package. See Chapter 1, "Installing R&S InstrumentView", on page 5.

4.5.2 Lab Display

Context Menu

Right-click on the instrument snapshot for the following menus:

- Recall file on this device
  This function recalls a dataset stored on the PC to the selected device.
- Copy setup
  This function copy the measurement setup of the selected device to the internal clipboard of R&S InstrumentView.
- Paste setup
  This function paste the measurement setup from the internal clipboard of R&S InstrumentView to the selected device
- Remote display
- Recall all from this device
  This function retrieves the measurement setup of the selected device and recalls it on all currently connected devices in the display window.
- Recall all from file
  This function recalls a dataset stored on the PC to the all connected devices in the display window.

The "Lab" menu displays a snapshot of all the connected instruments in the display window.

Each snapshot provides you an instrument identity and overview of the current measurement:

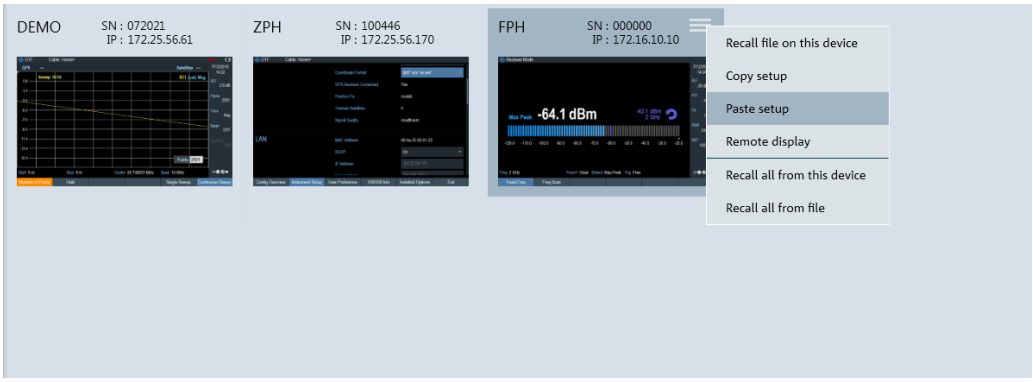


Figure 4-9: Snapshot of all connected instruments

4.5.3 File Transfer

The "File Transfer" provides the file transfer between the instrument and PC. You can make single or multiple files transfer or perform a file synchronization between the instrument and PC. See Figure 4-10.

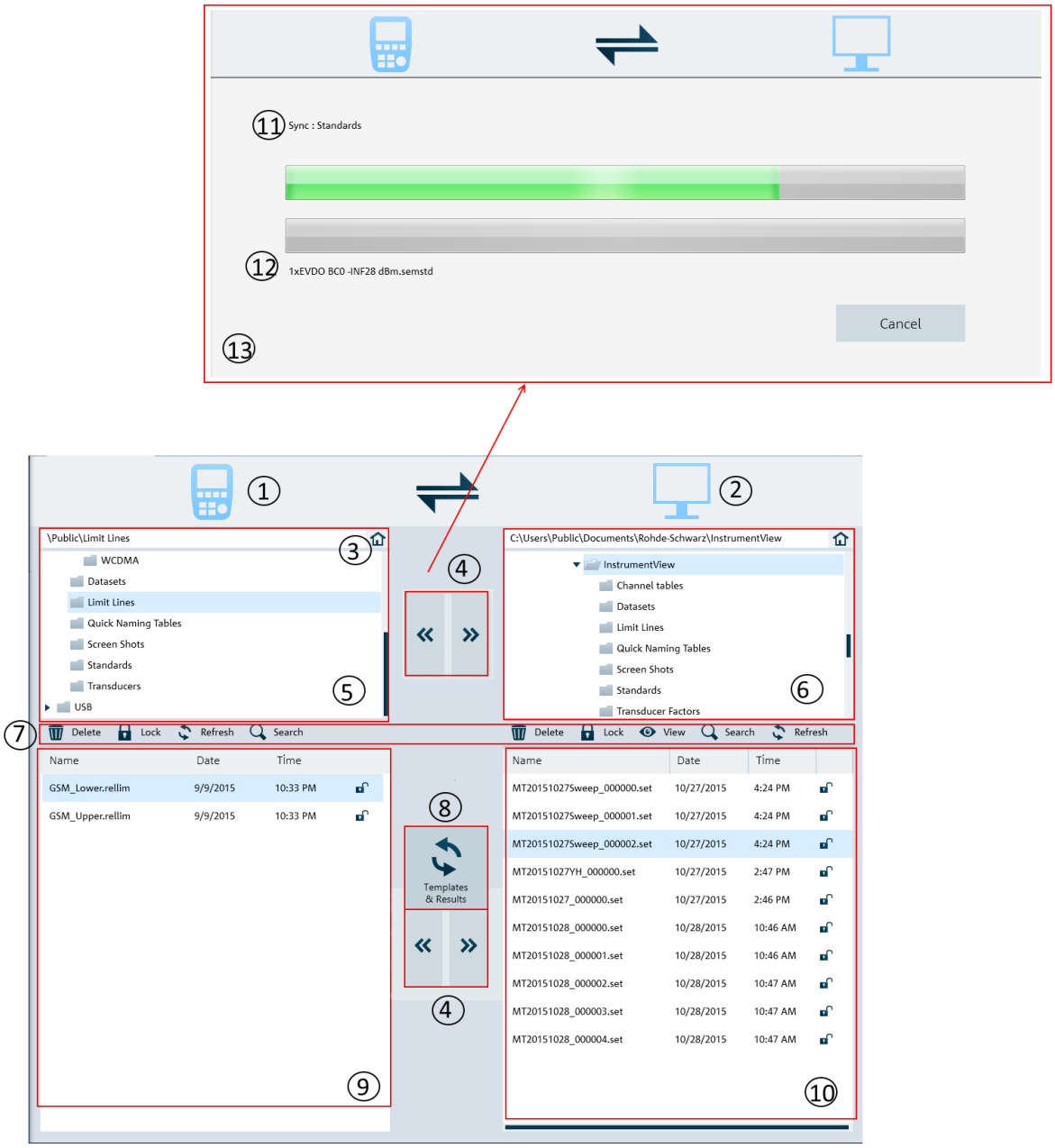


Figure 4-10: File transfer dialog

1 = Instrument icon.
2 = PC icon.
3 = Homepage
4 = File transfers from the instrument to PC and vice versa
5 = Instrument's folder directories
6 = PC's folder directories
7 = File transfer tools
8 = Templates & result synchronization
9 = List of selected files from the instrument
10 = List of selected files from the PC

11 = Progress bar showing the current folder synchronizing between the instrument and PC
12 = Progress bar showing the current file synchronizing between the instrument and PC
13 = Progress update dialog for "Templates and Results" synchronizing

Table 4-4: File transfer tools

Icon	Description
"Delete"	Delete the selected file.
"Lock"	Lock or unlock the selected file. Alternative, you can click the icon to unlock or lock the file. Note: A locked file is a read-only file, it can only be viewed and transferred.
"Refresh"	Refresh the file content in the selected folder directory.
"Search"	Perform a file search function in the selected folder directory.
"View"	View the details of the trace measurement file. For viewing, see Chapter 4.3, "Save Instrument", on page 21 for a list of file format supported. When a file is selected to be viewed, a tab is displayed in the header bar of the screen layout. See index 11 of Figure 4-12.

Homepage

When activated, the homepage helps you to set the directory path back to the root directory. (i.e. \"Public" for instrument, "..\Users\Public\Documents\Rohde-Schwarz \InstrumentView" for PC).

See Chapter 4.8.2, "Directory Settings", on page 77.

Templates & result synchronization

The "Templates & Result" synchronizes the different datasets and screenshots between the instrument and PC.

When activated, the file synchronization dialog box is displayed. It shows the progress status of the current folder and filename being synchronized. See index 13 in Figure 4-10.

When a file transfer conflict is detected during the synchronization process, the conflict dialog box is displayed to resolve the conflict. See Figure 4-11

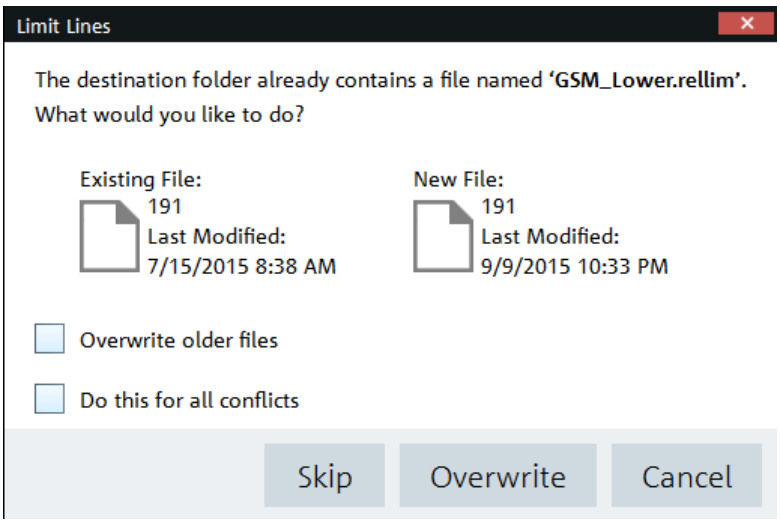


Figure 4-11: Conflict dialog box

Select "Overwrite older files" to overwrite older file with the newer file.

Select "Do this for all conflicts" to perform the "Skip" or "Overwrite" function in the current folder.

4.5.4 Synchronization

Context Menu

Right-click on the synchronization dialog box to access the following menus:

Synchronization dialog box

- "Include All", "Exclude All" - Include or exclude all the directories for file transfer.
- "Move Up", "Move Down" - Navigate the directories list.

Vertical scrollbar

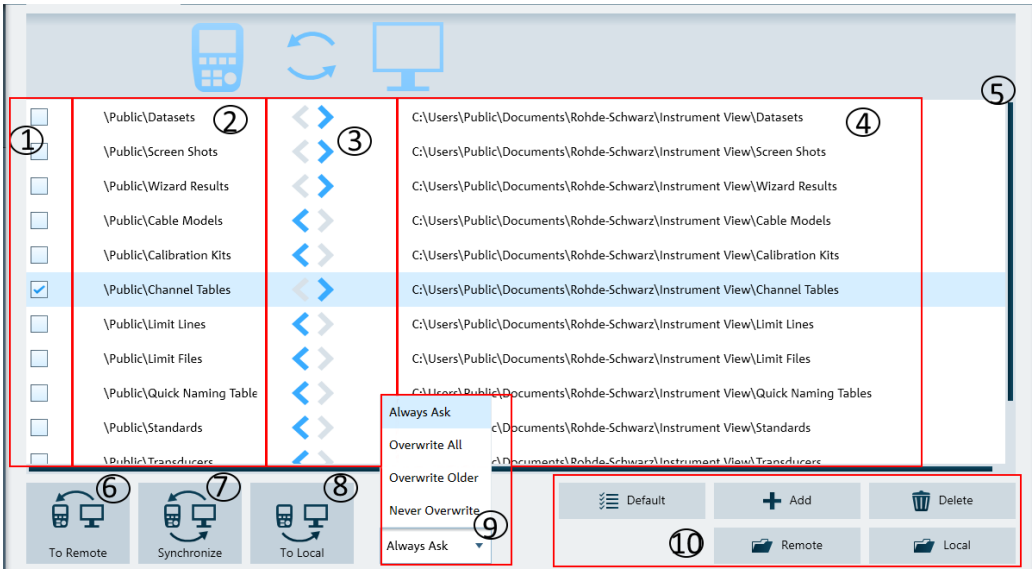
- See details in "Context Menu" on page 7.

Horizontal scrollbar

- See details in "Context Menu" on page 7.

The "Synchronization" menu allows you to synchronize files between the local PC to instrument, vice versa.

You can use the overwriting option to decide how you want to synchronize the files when there is a conflict of files transfer.



= Checkbox to select file directories for transfer
2 = Instrument file directories
3 = Direction of files transfer
4 = PC file directories
5 = Scrollbar to navigate files directories window
6 = File transfer icon to active file transfer from PC to instrument
7 = File synchronization icon to active file synchronization between PC and instrument, vice versa
8 = File transfer icon to activate file transfer from instrument to PC
9 = Overwriting option dialog box
10 = File manger icons

Table 4-5: File manager icons

File manager icon	Descriptions
Default	Preset the file directories window to default configuration
Add	Add a new file directory to the file directories window
Delete	Delete a new file directory to the file directories window
Remote	Access instrument file directories
Local	Access to local home directory

4.5.5 Multi-Transfer

The "Multi Transfer" menu allows you to capture and save trace measurements from the instrument. See Figure 4-12.

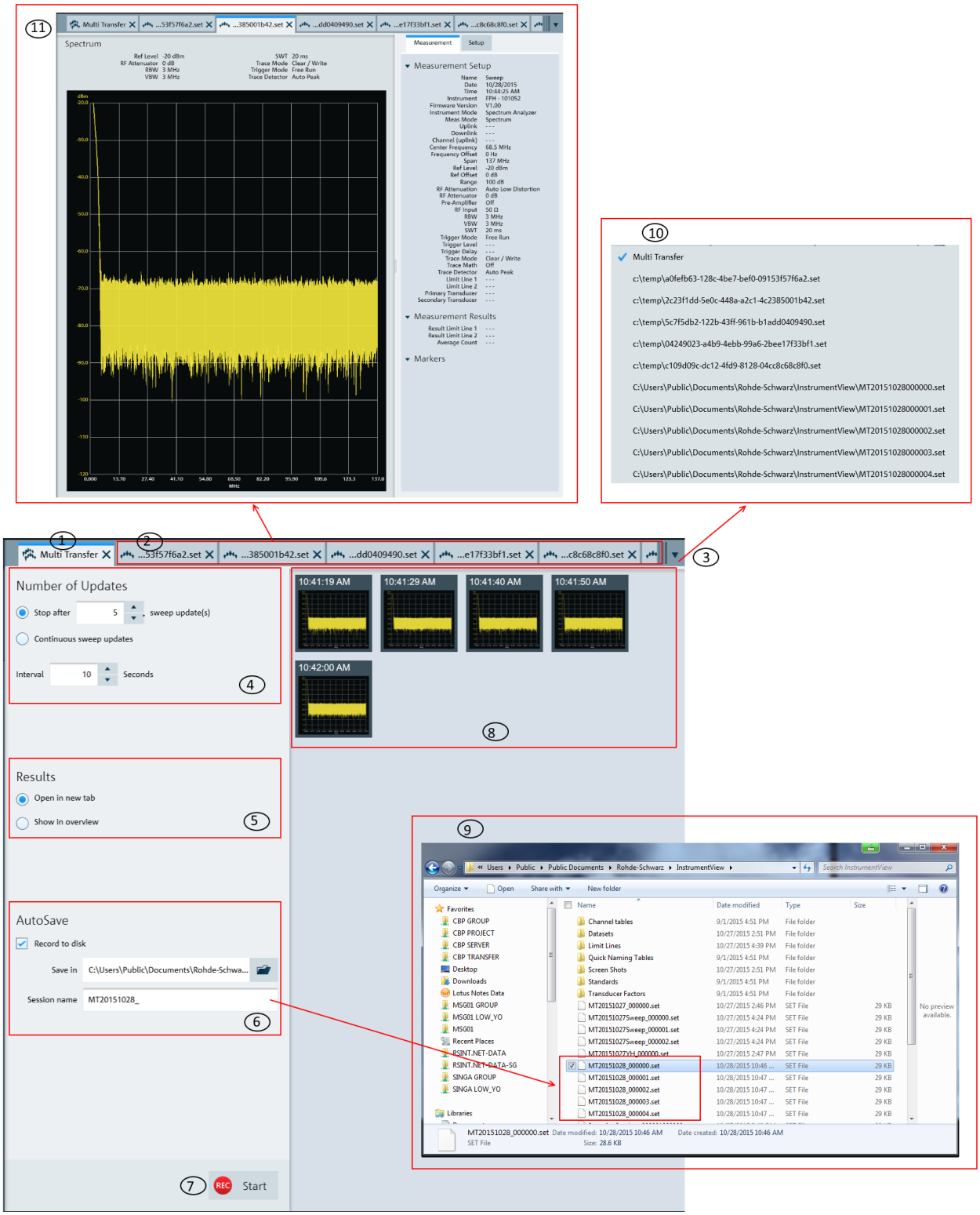


Figure 4-12: Multi-transfer dialog

1 = "Multi Transfer" tab displays the "Multi Transfer" dialog for settings
2 = Measurement results tab (see index 11 in Figure 4-12)
3 = Drop down icon to display the tab hidden in the "Tab header bar" (see index 4 in Figure 2-1)
4 = Number of updates
5 = Display settings to configure the display of results for the trace measurement
6 = Auto save settings for the auto save function
7 = "Start/Stop icon" on page 40 to record or stop the trace measurements captured from instrument
8 = Overview display area for trace measurement captured from the instrument
9 = File browser to show that trace measurement files are captured with a prefix "MT20151028" defined in "Session name"
10 = Details of the hidden tab displayed from the drop-down icon
11 = Details of the selected trace measurement in the "Tab header bar"

Number of updates

The trace measurement can be updated with the following conditions:

- Single sweep with a fixed number.
  Default value is 5. Maximum value is 100000.
- Continuous sweep

The trace measurement is captured with a fixed interval timing defined by "Interval". Default value is 10. Maximum value is 3600.

Results

There are two ways to display the trace measurements captured from the instrument.

- Display the trace measurement in the overview area. See index 8 in Figure 4-12.
- Display the individual trace measurement result in the "Tab header bar". See index 2 in Figure 4-12.

Click the individual trace measurement captured in the overview area to display the details information of trace measurement in the "Tab header bar".

See index 11 in Figure 4-12.

See also Chapter 4.4.1, "Get Trace", on page 22.

Auto save

The "AutoSave" performs an auto save function on the trace measurement updates from the instrument to PC hard disk.

The trace measurements are saved with a prefixed filename configure in the "Section name" and with an incremental order from _"000001" to _"xxxxxx". The "Save in" defined the file directory where these trace measurements are saved.

See index 9 in Figure 4-12 to view the trace measurements captured in the file directory.

Start/Stop icon

The R&S InstrumentView prompts you to save unsaved data captured in the last recording session when the "Start" function is activated. See Figure 4-13.

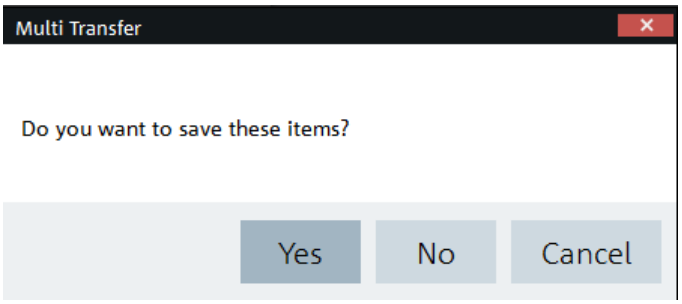


Figure 4-13: Unsaved data user prompt dialog box

The "Start" icon performs the recording function to capture the trace measurement updates from the instrument.

Depending on the setting in the "Results" section (see index 5 in Figure 4-12), the trace measurement updates can be displayed in the overview area (see index 8 in Figure 4-12) or individually displayed as a new tab in the tab header bar (see index 2 in Figure 4-12).

When the "Start" is activated, the "Start" icon changes to "Stop" icon . The "Stop" icon allows you to stop the recording process. When the "Stop" is activated, the R&S InstrumentView opens the "Delete" dialog. See Figure 4-14.

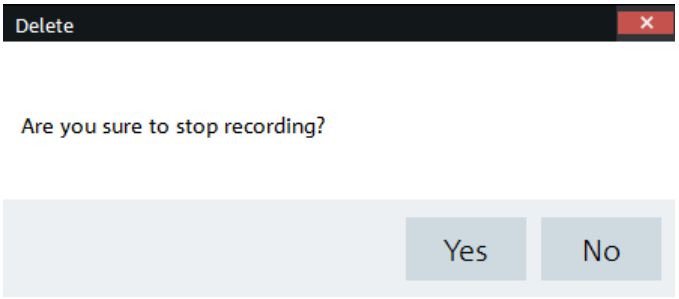


Figure 4-14: Delete dialog

Select "Yes" to stop the recording process.

4.5.6 Screenshot

Context Menu

Right-click on the trace window to access the following menus:

- "Show measurement setup" - If enabled, the instrument settings and the trace data are displayed below the screenshot. See Figure 4-15.
- "Copy to clipboard" - Copy the screenshot to the clipboard.

The "Screenshot" is used to capture the active instrument screen and display it in the trace window. See Figure 4-15.

This trace window is printed or saved for further editing in the application.

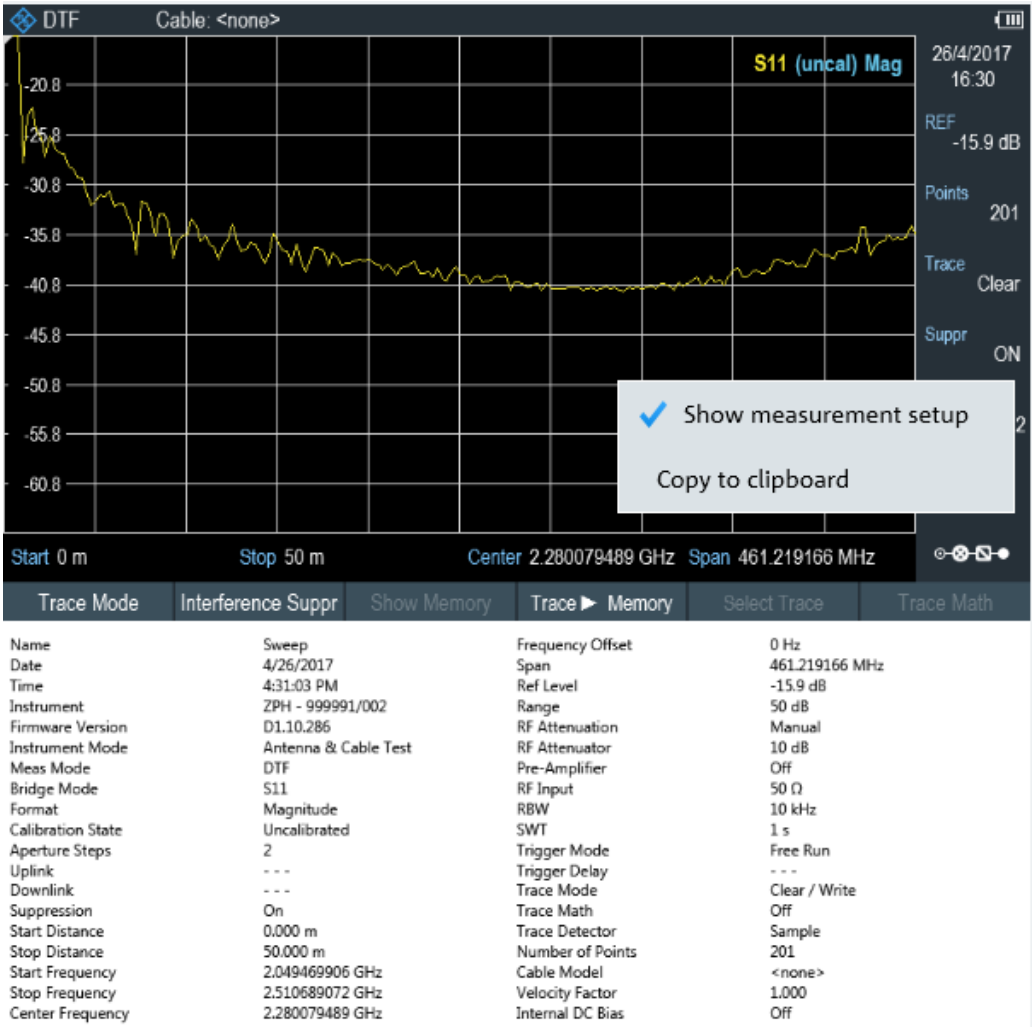


Figure 4-15: Screenshot

4.5.7 Date Time Synchronization

The"Date Time Sync" is used to synchronize the date and time of the connected instrument with PC.

Click "OK" to confirm the "Date and Time" synchronization. See Figure 4-16.

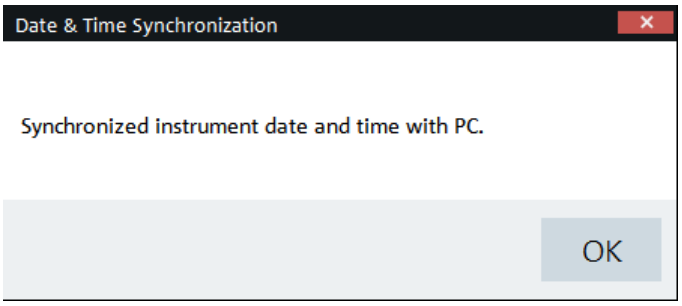


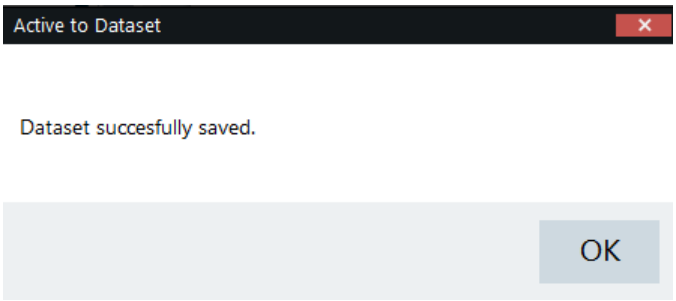
Figure 4-16: Date and time synchronization

4.5.8 Save Active Dataset

The "Active to Dataset" is used to save the current active dataset from the instrument to PC.

Click "Active to Dataset" to browse to the local PC directories to save the dataset file.

A message is displayed when the dataset file is saved successfully.

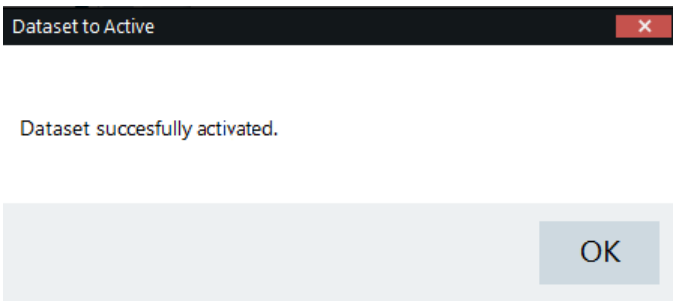


4.5.9 Activate Dataset to Instrument

The "Dataset to Active " menu is used to activate a dataset file from PC to the instrument.

Click "Dataset to Active" to browse a dataset file from the local PC directories and activate it to the instrument.

A message is displayed when the dataset file is activated successfully.



4.5.10 Firmware Update

Instrument selected for firmware update must be powered by a power adapter.
USB or SD card storage is needed in each device during the firmware update.

The "Firmware Update" menu provides the firmware update for the range of instruments supported by R&S InstrumentView.

Firmware update can be performed concurrently on the selected instruments belonging to the same instrument family.

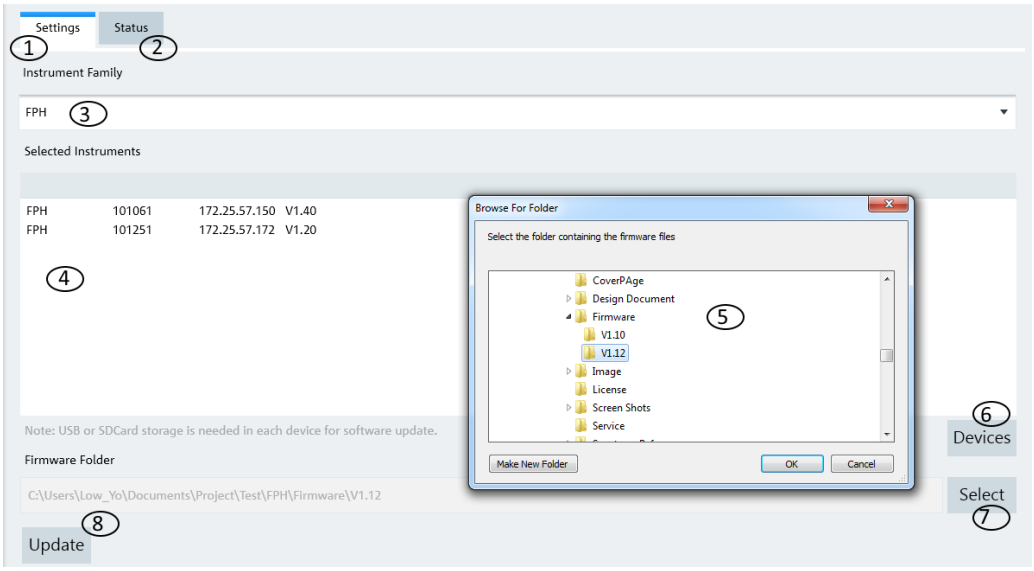
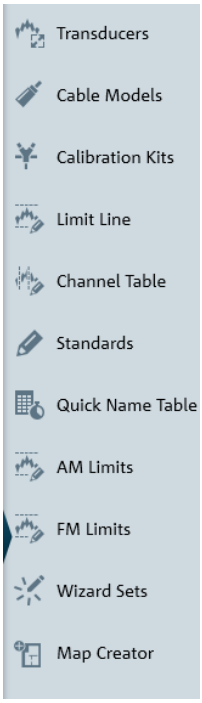


Figure 4-17: Firmware update dialog

1 = Settings for the firmware update
2 = Status of the firmware update process
3 = Instrument family selection (FPH, ZPH, FPC. FSC, FSH4, ZVH4)
4 = Instrument list
5 = File browser to display the file folders
6 = Displays the Connection Manager
7 = Displays file browser to search instrument firmware

4.6 Working with Instrument Datasets



The "Editor" menu allows you to configure the different dataset used in the instrument. See the following sections for more information on the dataset editor.

4.6.1 Using Transducers

The frequency-dependent transducers table is used to correct the level values of the trace measurement for frequency-dependent components such as antennas, splitters and cables used in the test measurements.

The R&S InstrumentView comes with a list of predefined transducers tables for R&S components such as antennas and matching pad. Using the "Transducers" editor menu, you can customize the transducers table used for the frequency-dependent components introduced in your test measurements. See "Transducers table editor" on page 44.

Each transducer table may consist of up to 1000 reference values.

Transducers table editor

The "Transducers" table editor allows you to open, edit and save the transducers table. See Figure 4-18.

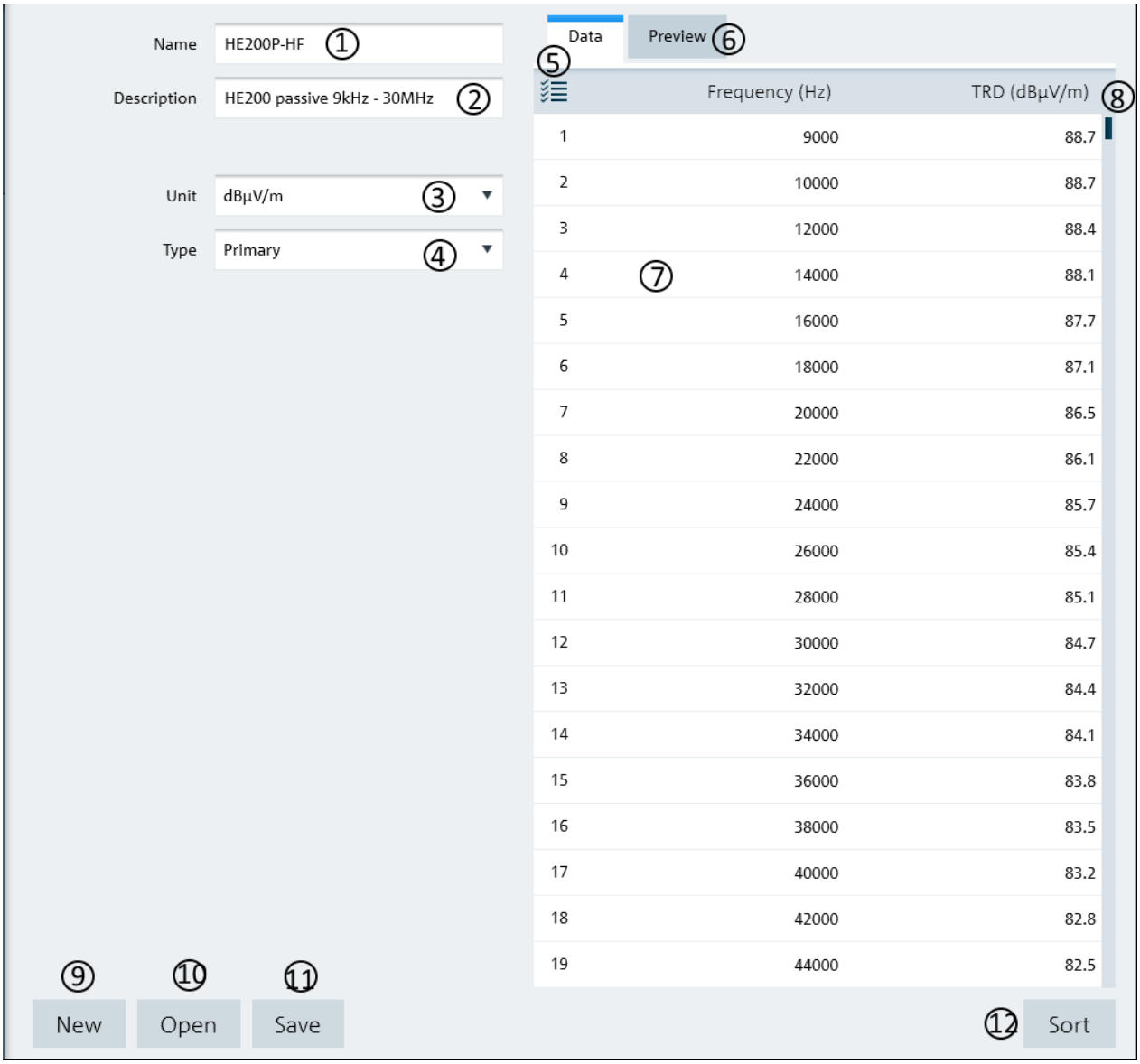


Figure 4-18: Transducer table editor

1 = Name of the transducers table
2 = Description of the transducers table
3 = "Unit" defines the level unit used in the transducers table ("dBµV/m", "dBµA/m")
4 = "Type" defines the type of transducer factor ("Primary", "Secondary", "Isotopic") used for the transducer table
5 = "Data" tab shows the details of the transducers table
6 = "Preview" tab displays the transducers table in a chart (see "Preview transducer table" on page 46)
7 = Editor of the transducers table
8 = Scroll bar
9 = "New" button creates a transducer table for entry
10 = "Open" button loads an existing transducers table
11 = "Save" button saves the current transducers table
12 = "Sort" button sorts the "Frequency (Hz)" of the transducers table in ascending order

Preview transducer table

The "Preview" tab displays the transducer table in a chart. It provides an overview of the frequency response of transducer table. See Figure 4-19.

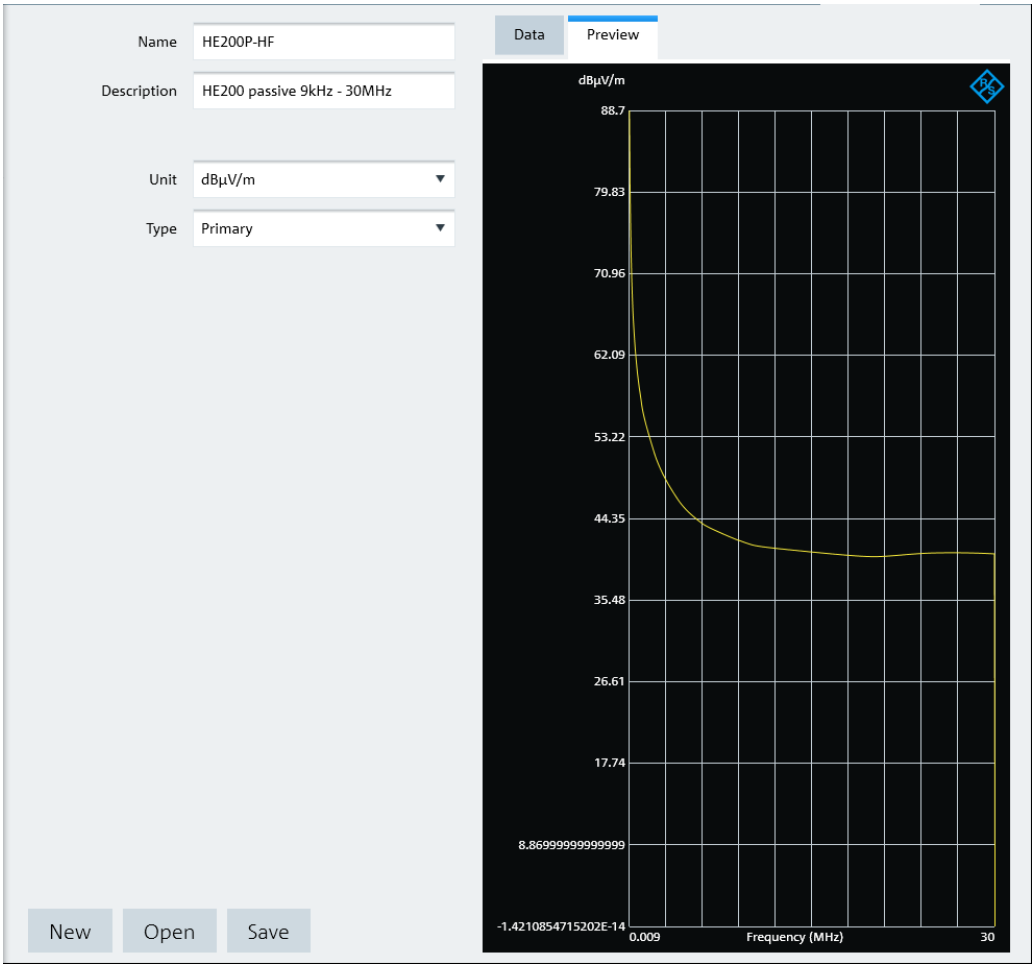


Figure 4-19: Preview transducer table

4.6.2 Using Cable Models

Cable model is only applicable for R&S ZPH, R&S FSC, R&S FSH4 and R&S ZVH product series.

The R&S InstrumentView comes with a list of channel models which describes the cable characteristics. Using the "Cable Models" editor menu, you can customize the cable model according to your requirements.

Cable models editor

The "Channel Models" editor allows you to open, edit and save the cable model. See Figure 4-20.

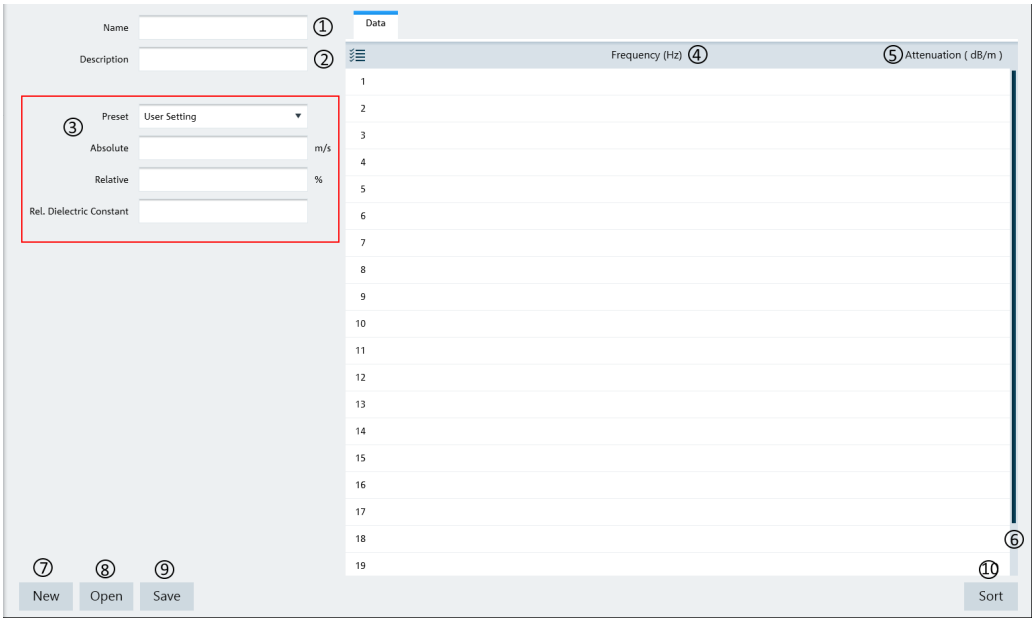


Figure 4-20: Cable models editor

1 = Name of the cable model
2 = Description of the cable model
3 = Propagation velocity of the cable model
4 = Cable frequency
5 = Cable attenuation
6 = Scroll bar to navigate the cable model editor
7 = "New" button creates a cable model for entry
8 = "Open" button loads an existing cable model
9 = "Save" button saves the current cable model
10 = "Sort" button sorts the "Frequency (Hz)" of the cable model in ascending order

Propagation velocity

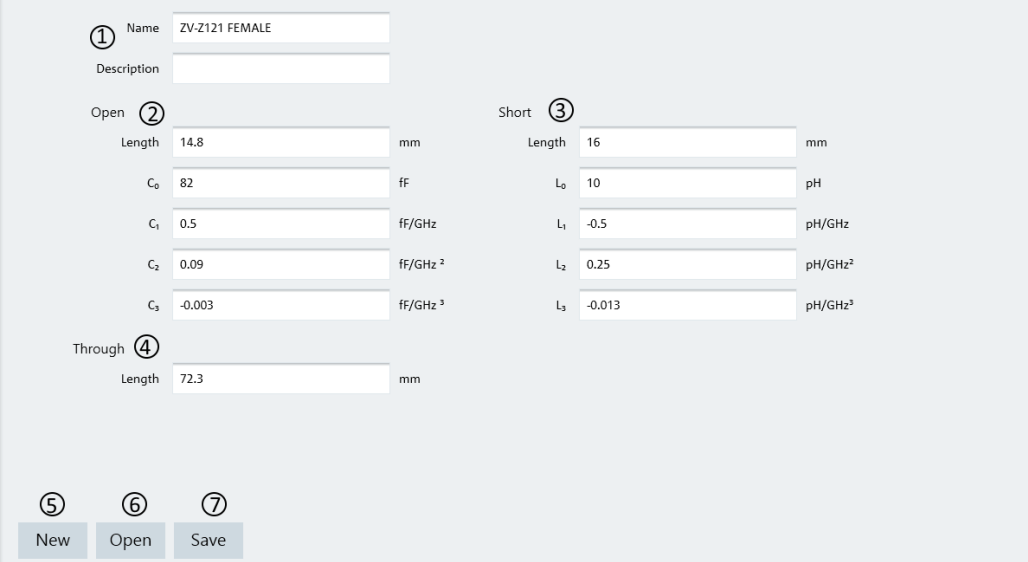
You can customize the propagation velocity for the cable model or use the following preset configuration:

Type	Absolute m/s	Relative %	Rel. dielectric constant
Solid polyethelene	197700000	65.9	2.3
Foam polyethelene	240000000	80.1	1.56
Foam polystyrene	273000000	91.1	1.21
Solid teflon	208200000	69.4	2.07

4.6.3 Calibration Kits

The "Calibration Kits" editor is only applicable for R&S ZPH, R&S FSH4 and R&S ZVH product series.

The "Calibration Kits" editor provides the necessary parameters for you to define the calibration kit file associated with the calibration kit.



1 = Name and description of the calibration kit
2 = Parameters for "Open" standard
3 = Parameters for "Short" standard
4 = Parameters for "Through" standard
2 = "New" button creates a calibration kit file for entry
3 = "Open" button loads an existing calibration kit file for modification
4 = "Save" button saves the current calibration kit file

4.6.4 Using Limit Lines

The limit line is used to identify if a signal complies with a certain level of characteristics. It is made up of two or more points that are connected to a line and each of the point that defines the shape of the limit line consist of two coordinates. One coordinate defines the absolute or relative value of the X-Unit position ("Hz", "s","m") and the other coordinate is the Y-Unit position ("dB", "dBm", "dBµV", "dBmV", "dBµA/m", "V", "V/m", "W", "W/m^2", "VSWR"). See "Limit lines table editor" on page 49.

The R&S InstrumentView comes with a list of limit lines table which is according to the test transmission standards. Using the "Limit Line" editor menu, you can customize the limit lines table which is deviated from the test transmission standards. See "Limit lines table editor" on page 49.

Limit lines table editor

The "Limit Line" table editor allows you to open, edit and save the limit lines table. See Figure 4-21.

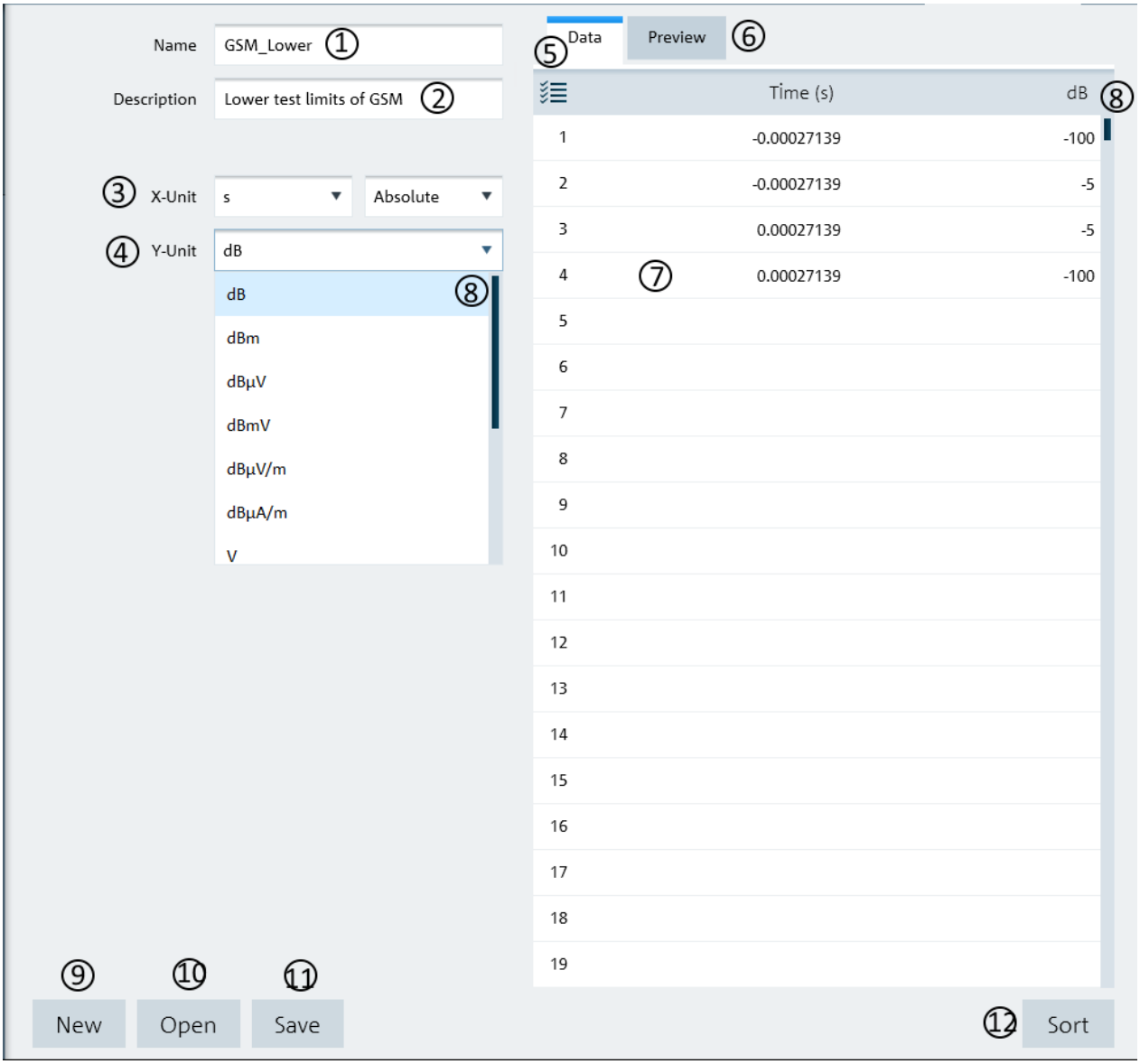


Figure 4-21: Limit lines table editor

1 = Name of the limit lines table
2 = Description of the limit lines table
3 = "X-Unit" defines the unit used on the x axis of the limit lines table
4 = "Y-Unit" defines the unit used on the y axis of the limit lines table
5 = "Data" tab shows the details of the limit lines table
6 = "Preview" tab displays the limit lines in a chart (see "Preview limit lines table" on page 50)
7 = Editor of the limit lines table
8 = Scroll bar
9 = "New" button creates a limit line table for entry

10 = "Open" button loads an existing limit lines table
11 = "Save" button saves the current limit lines table
12 = "Sort" button sorts the x axis of the limit lines table in ascending order

Preview limit lines table

The "Preview" tab displays the limit lines in a chart. It provides an overview of the frequency response of the limit lines. See Figure 4-22.

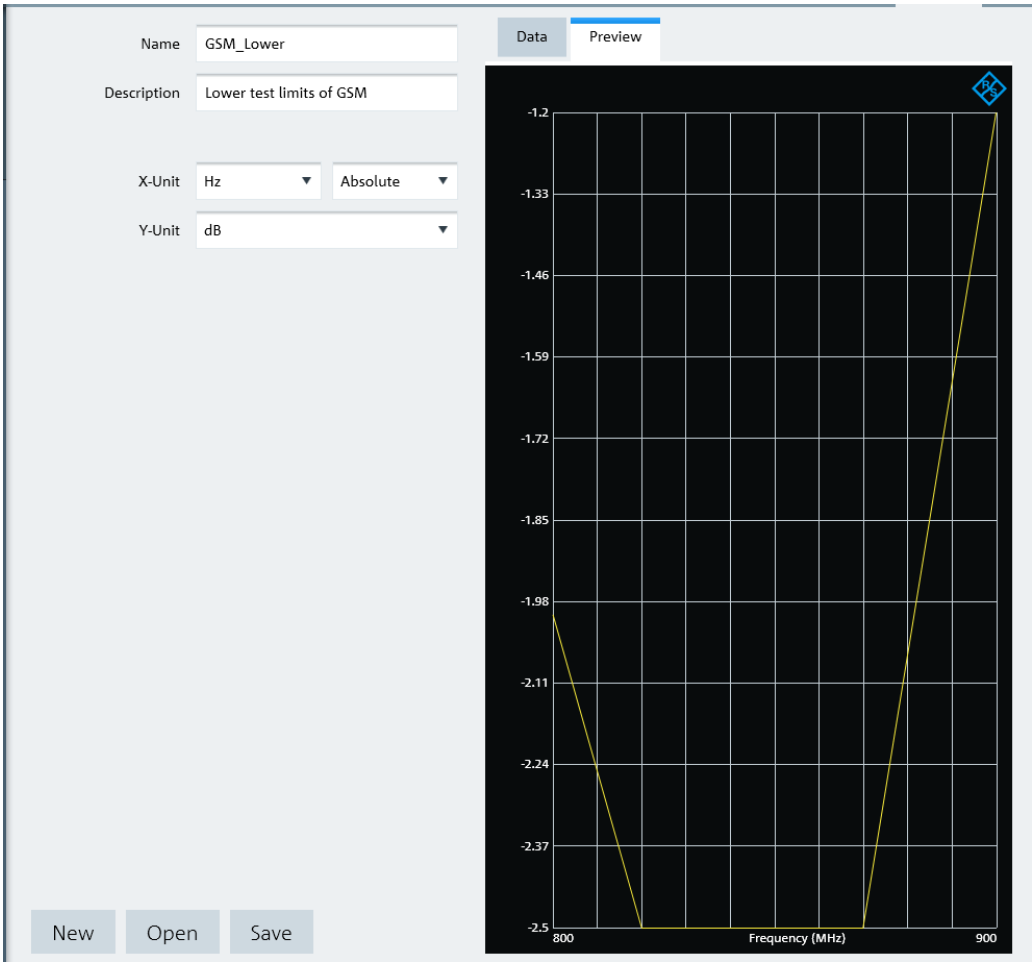


Figure 4-22: Preview limit lines

4.6.5 Using Channel Table

The R&S InstrumentView comes with a list of channel tables which are according to the test transmission standards. Using the "Channel Table" editor menu, you can customize the channel table which is deviated from the test transmission standards. See "Channel table editor" on page 51.

Channel table editor

The "Channel Table" editor allows you to open, edit and save the channel table. See Figure 4-23.

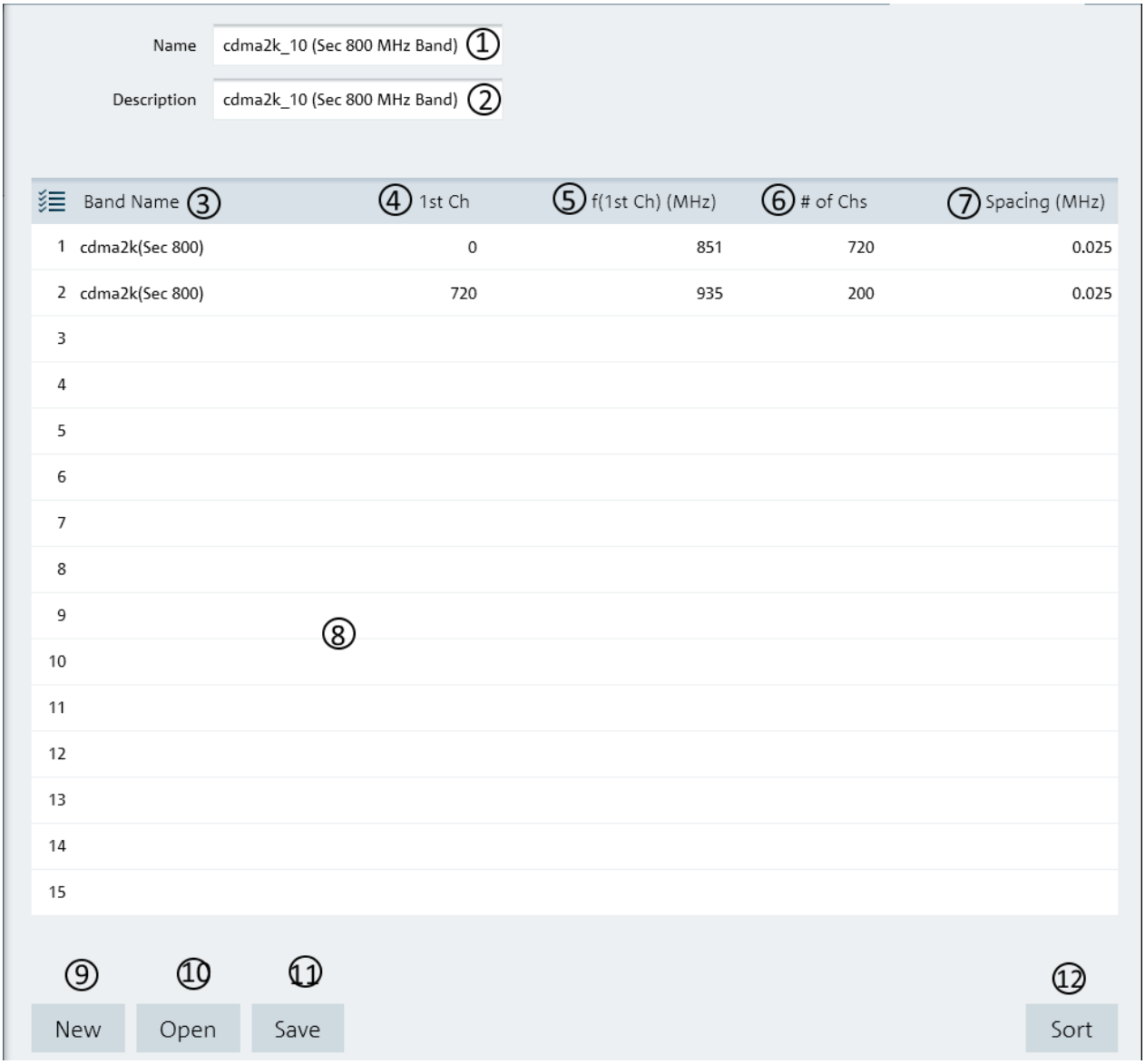


Figure 4-23: Channel table editor

1 = Name of the channel table
2 = Description of the channel table
3 = Band name in the channel table
4 = Starting channel number in the frequency band
5 = Starting frequency of the "1st Ch" channel
6 = Number of channels in the frequency band
7 = Channel spacing between two channels
8 = Editor of the channel table
9 = "New" button creates a channel table for entry

10 = "Open" button loads an existing channel table
11 = "Save" button saves the current channel table
12 = "Sort" button sorts the "1st Ch" of the channel table in ascending order

4.6.6 Using Standards

The "Standards" table editor is only applicable for R&S FPH, R&S FSC, R&S FSH4 and R&S ZVH product series.

The R&S InstrumentView comes with a list of mobile radio standards with predefined test measurement settings according to the standard's requirements. Using the "Standards" editor menu, you can customize the test measurement settings which are deviated from the standards. See Chapter 4.6.6.1, "Standards Table Editor", on page 52.

4.6.6.1 Standards Table Editor

The "Standards" table editor allows you to open, edit and save the measurement settings for a test standard. See Figure 4-24.

See the respective instrument user manual for details of each of the measurement settings in the dialog.

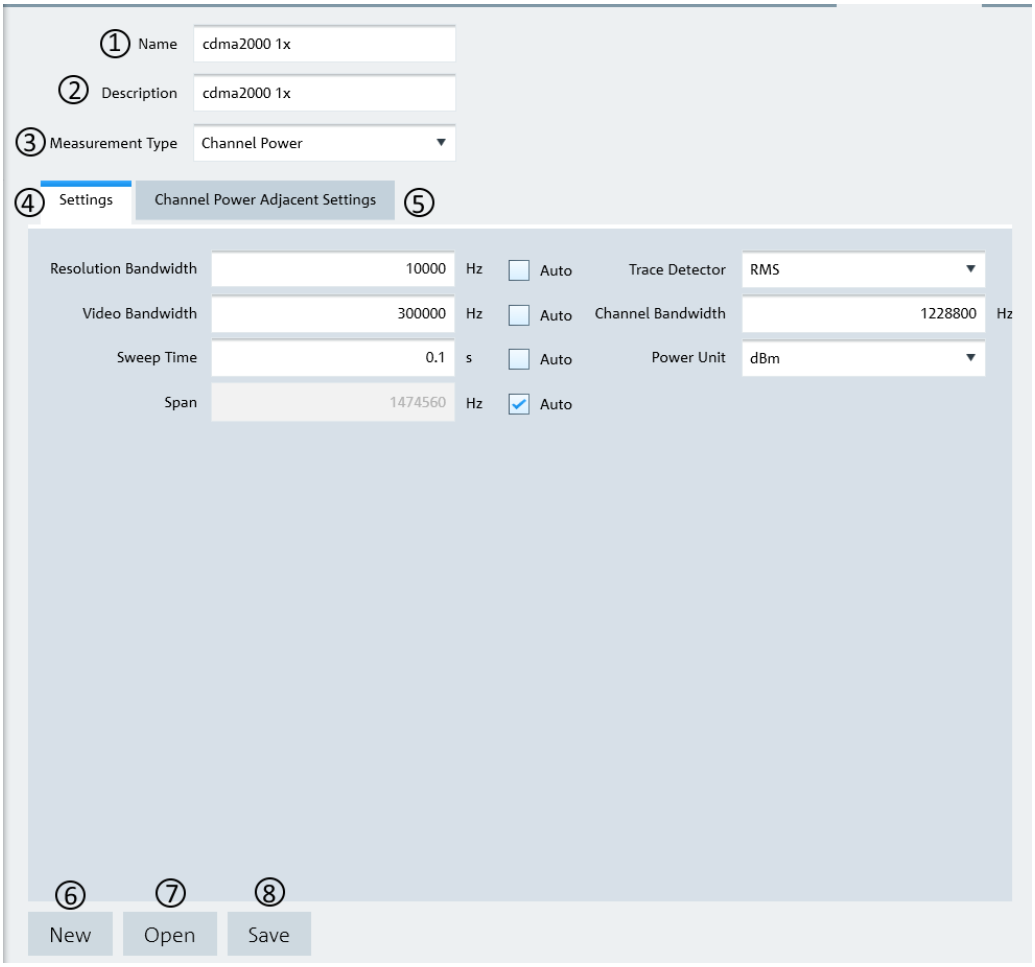


Figure 4-24: Standard table editor

1 = Name of the standard table
2 = Description of the standard table
3 = Measurement Type ("Channel Power", "Occupied Bandwidth", "TDMA", "Spectrum Emission Mask")
4 = Details of the "Settings" tab are associated with the "Measurement Type" selected (see Chapter 4.6.6.2, "Measurement Type", on page 53)
5 = Details of the "Channel Power Adjacent Settings" tab are associated with the Measurement Type selected
8 = "New" button creates a new standard table for entry
9 = "Open" button loads an existing standard table
10 = "Save" button saves the current standard table

4.6.6.2 Measurement Type

Depending on the mobile radio standard used in the test measurements, there are four different types of "Measurement Type" which you can select to customize your measurement settings.

See the respective instrument user manual for details of each of the measurement type.

Channel power

The channel power measurement selectively measures the power of a specified transmission channel and adjacent channels. The following dialog provides the required measurement settings in the "Settings" tab and the TX channels and adjacent channels configuration in the "Channel Power Adjacent Settings" tab.

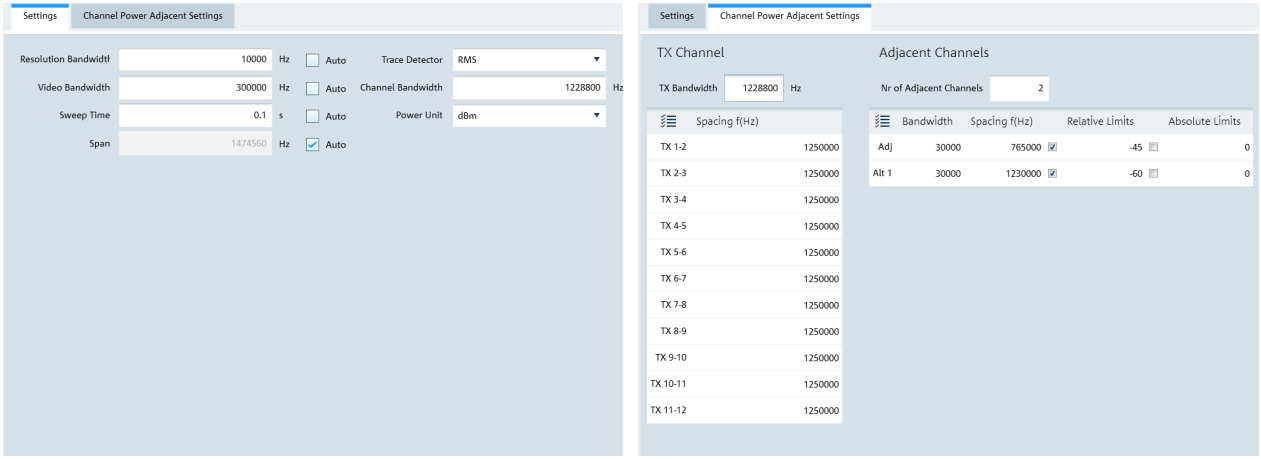


Figure 4-25: Channel power settings

Occupied bandwidth

The occupied bandwidth is defined as the bandwidth that contains a specified percentage of the entire power of the transmitter. Default occupied bandwidth for the entire power of the transmitter is predefined at 99%. The following dialog provides the required measurement settings in the "Settings" tabs.

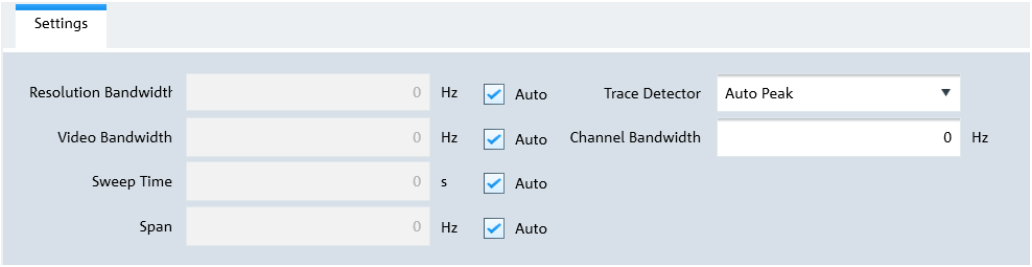


Figure 4-26: Occupied bandwidth settings

TDMA power

The TDMA (time division multiple access) power is measured in the time domain of the instrument. In the mobile radio standard like, e.g. GSM, several users share a channel and each user is assigned a period of time or timeslot for usage. With TDMA power measurement, you can determine the power over one of the timeslot. The following dialog provides the required measurement settings in the "Settings" tabs.

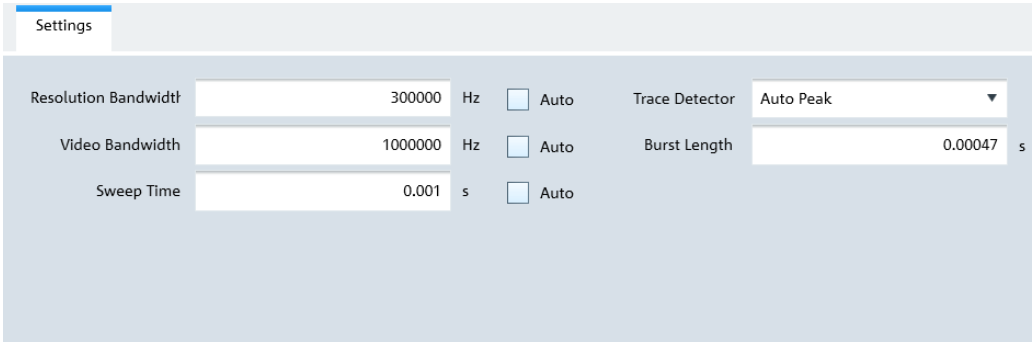


Figure 4-27: TDMA settings

Spectrum emission mask

The spectrum emission mask (SEM) measurement is a method used to detect the spurious emissions or intermodulation products of a signal. When performing the SEM measurement, the instrument checks the signal against a spectral mask to determine whether the signal complies with a specific standard. The following dialog provides the required settings to define the spectral mask in the "SEM" tab. The "Preview" tab illustrates the spectral mask defined in the "SEM" tab.

SEM | Preview

	Limit Check Mode	Range Start	Range Stop	RBW	Limit Start Abs (dBm)	Limit Stop Abs (dBm)	Limit Start Rel
1	Absolute	-12750000	-8500000	1000000	-49	-49	
2	Absolute	-8500000	-7500000	1000000	-49	-39	
3	Absolute	-7500000	-3500000	1000000	-39	-35	
4	Absolute	-3500000	-2500000	30000	-50	-35	
5	Ref Chan Power	-2500000	2500000	30000			
6	Absolute	2500000	3500000	30000	-35	-50	
7	Absolute	3500000	7500000	1000000	-35	-39	
8	Absolute	7500000	8500000	1000000	-39	-49	
9	Absolute	8500000	12750000	1000000	-49	-49	
10	None						
11	None						
12	None						
13	None						
14	None						

Figure 4-28: SEM settings

4.6.7 Using Quick Name Table

The "Quick Name Table" is only applicable for R&S FSC, R&S FSH4 and R&S ZVH product series.

The R&S InstrumentView comes with a predefined quick name table which provides a set of naming elements that can be used to create meaningful name in a faster and convenient manner. Using the "Quick Name Table" editor menu, you can customize the frequently used terms when compiling a filename. See "Quick name table editor" on page 56.

Quick name table editor

The "Quick Name Table" editor allows you to open, edit and save the quick name table. See Figure 4-29.

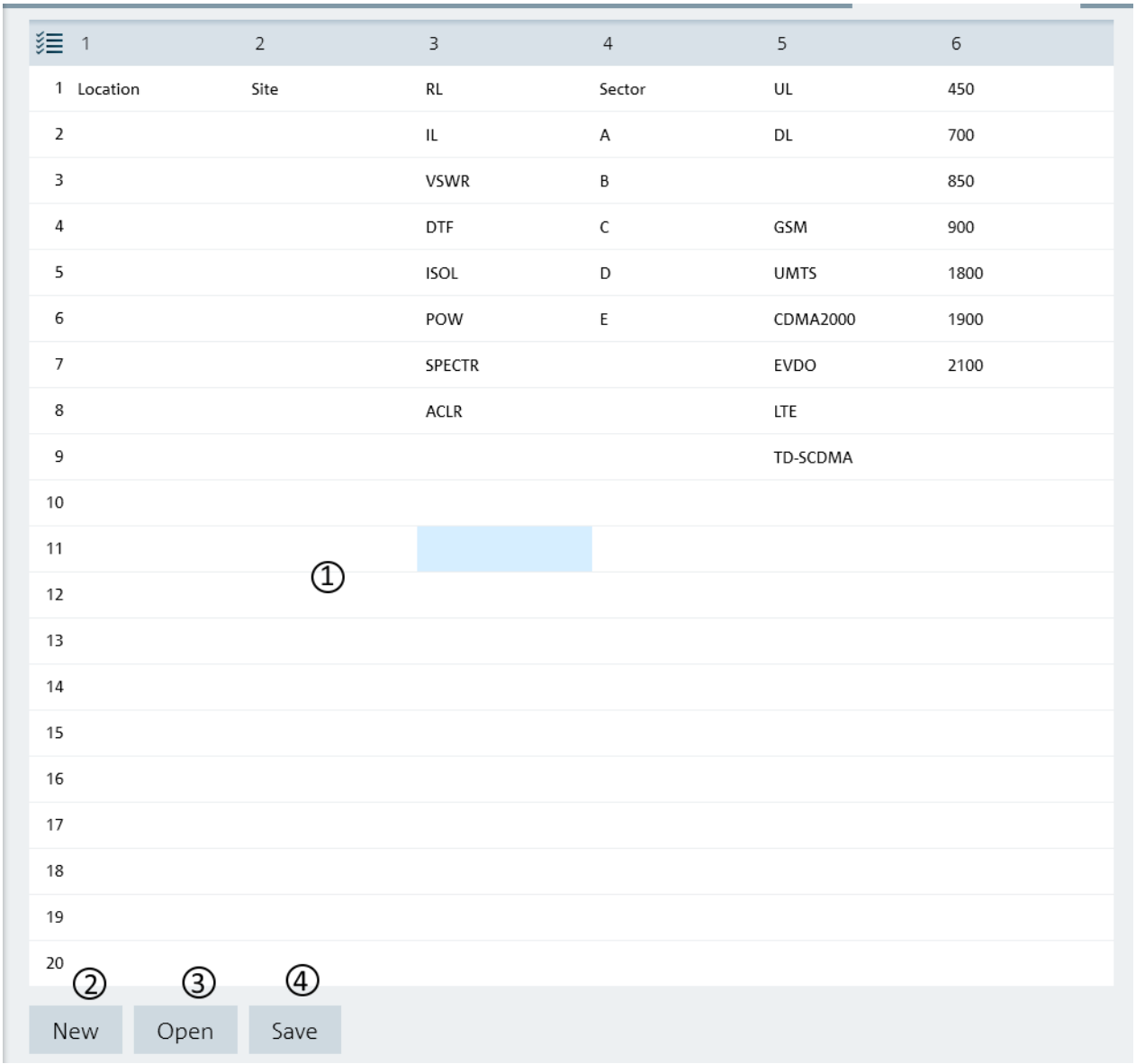


Figure 4-29: Quick name table editor

1 = Editor of the "Quick Name Table"
2 = "New" button creates a new quick name table for entry
3 = "Open" button loads an existing quick name table
4 = "Save" button saves the current quick name table

4.6.8 Using Analog Modulation Analysis AM Limits

The "Analog Modulation Analysis AM Limits" is only applicable for R&S FPH and R&S FPC product series.

Using the "Ama AM Limits" editor menu, you can customize the "Ama AM Limits" table which is used to evaluate the performance of the amplitude modulated signal. See Figure 4-30.

Ama AM limits table editor

The "Ama AM Limits" table editor allows you to open, edit and save the Ama AM limits table . See Figure 4-30.

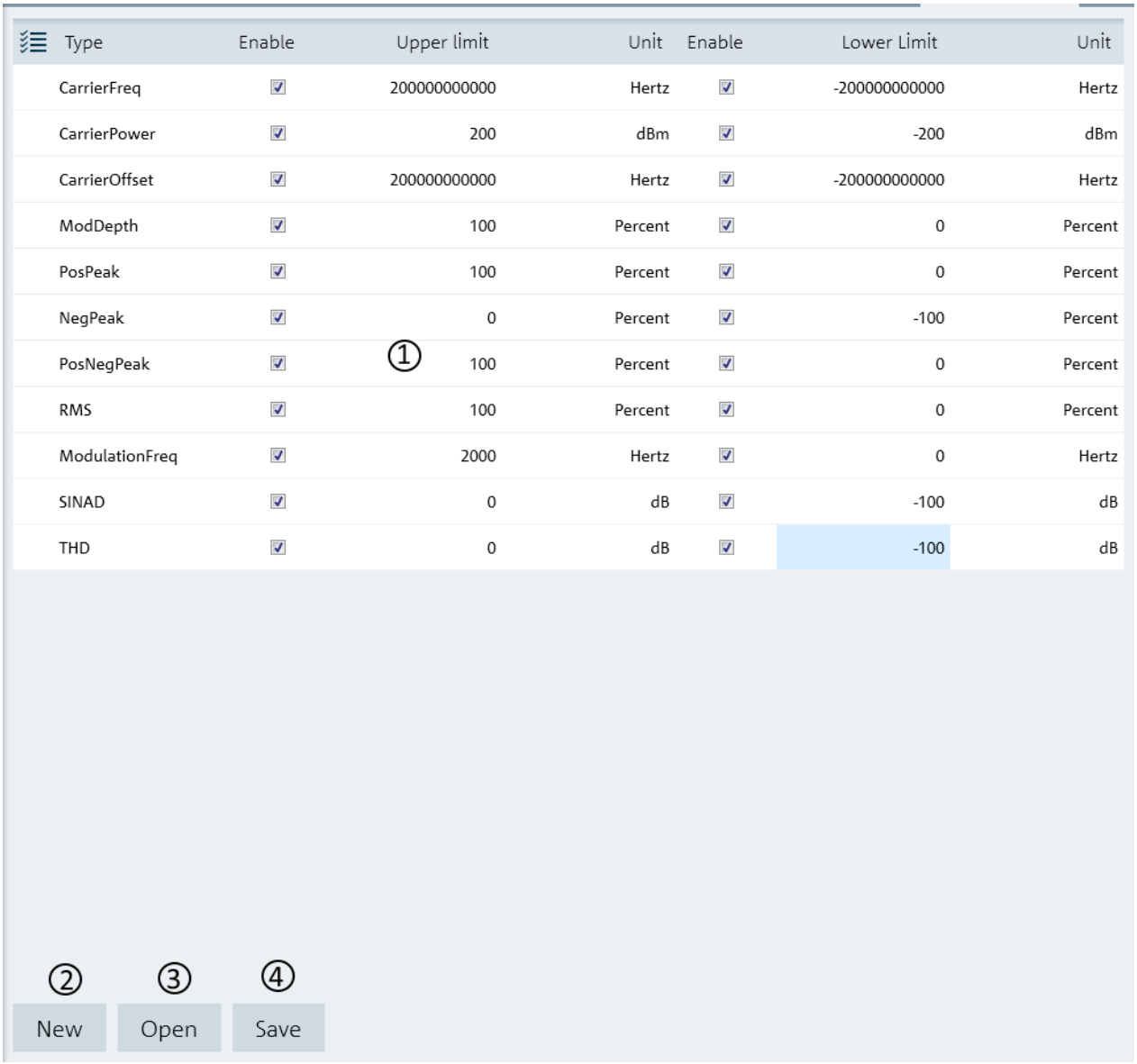


Figure 4-30: Ama AM limits table editor

1 = Editor of the "Ama AM Limits" table
2 = "New" button creates an Ama AM limits table for entry
3 = "Open" button loads an existing Ama AM limits table
4 = "Save" button saves the current Ama AM limits table

4.6.9 Using Analog Modulation Analysis FM Limits

The "Analog Modulation Analysis FM Limits" is only applicable for R&S FPH and R&S FPC product series.

Using the "Ama FM Limits" editor menu, you can customize the "Ama FM Limits" table which is used to evaluate the performance of the frequency modulated signal. See Figure 4-31.

Ama FM limits table editor

The "Ama FM Limits " table editor allows you to open, edit and save the Ama FM limit table . See Figure 4-31.

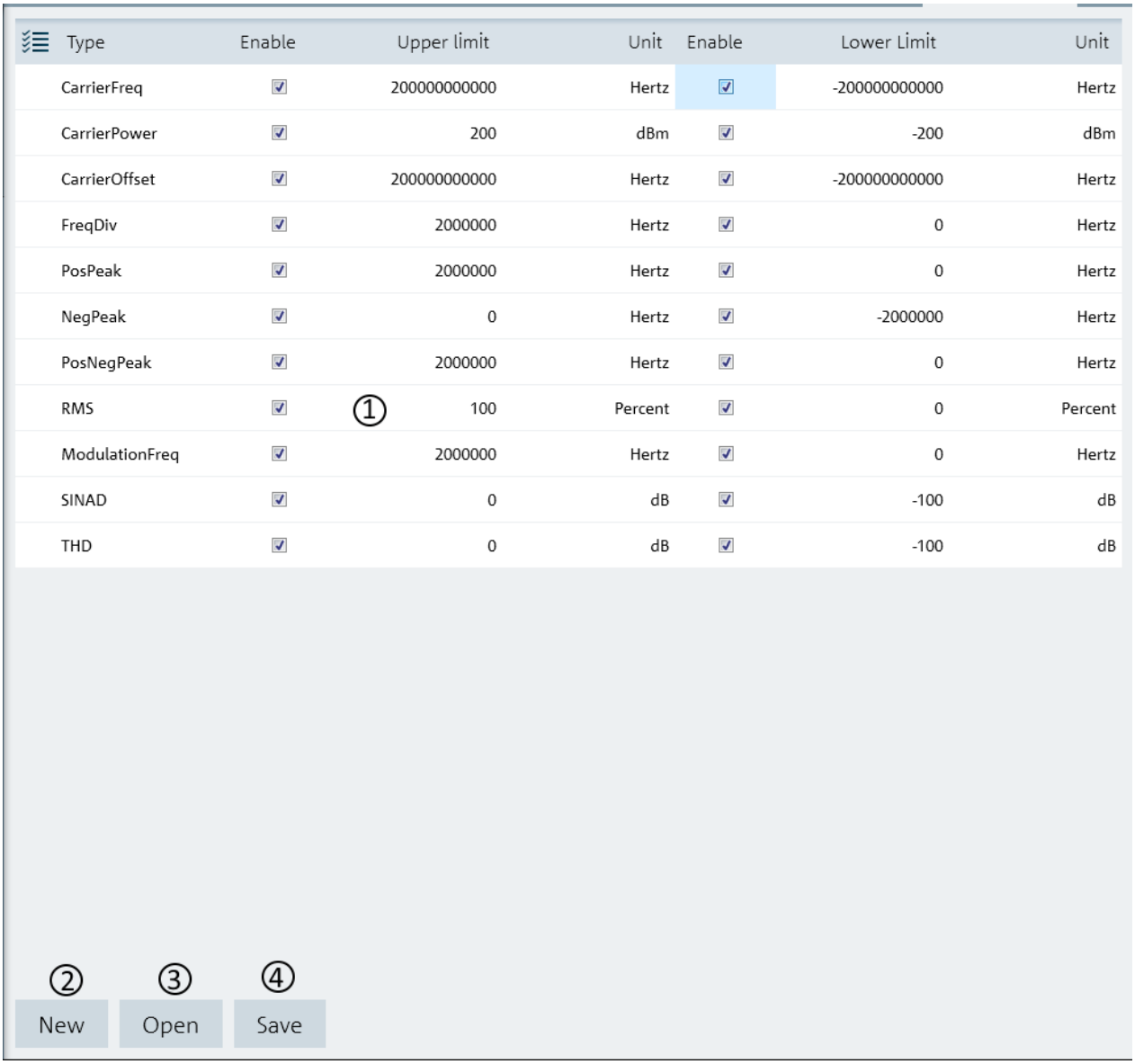


Figure 4-31: Ama FM limits table editor

1 = Editor of the "Ama FM Limits" table
2 = "New" button creates an Ama FM limits table for entry
3 = "Open" button loads an existing Ama FM limits table
4 = "Save" button saves the current Ama FM limits table

4.6.10 Wizard Set Editor

The "Wizard Set Editor" is not applicable for the R&S FSC product series.

Using the "Wizard Set Editor" menu, you can customize the measurement table list which consists of several datasets used to perform a specific instrument setting and measurements, for example frequency setting, power meter measurement, analog modulation measurement. To acquire a dataset, set up the instrument as per your requirement and save the configuration. You can also use one of the predefined datasets to customize the measurement table list.

For instrument setup using the R&S FSH4 or R&S ZVH, the editor provides additional selection for calibration method use in the wizard measurement. See the respective instrument user manual for the list of available calibration method.

The section for "Cable Definition for Antenna & Cable Test" is not available for instrument setup using the R&S FPC and R&S FPH.

The measurement table list forms the measurement sequence in the wizard set. See item 5 in Figure 4-32

For more information on dataset, see Chapter 4.3, "Save Instrument", on page 21.

Wizard

The "Wizard " editor allows you to open, edit and save the measurement wizard set. See Figure 4-32.

To arrange the measurement sequence in the wizard set, double clicked or "Add" the desired dataset from the PC folder directory to the measurement table list. See index 4 and 5 of Figure 4-32.

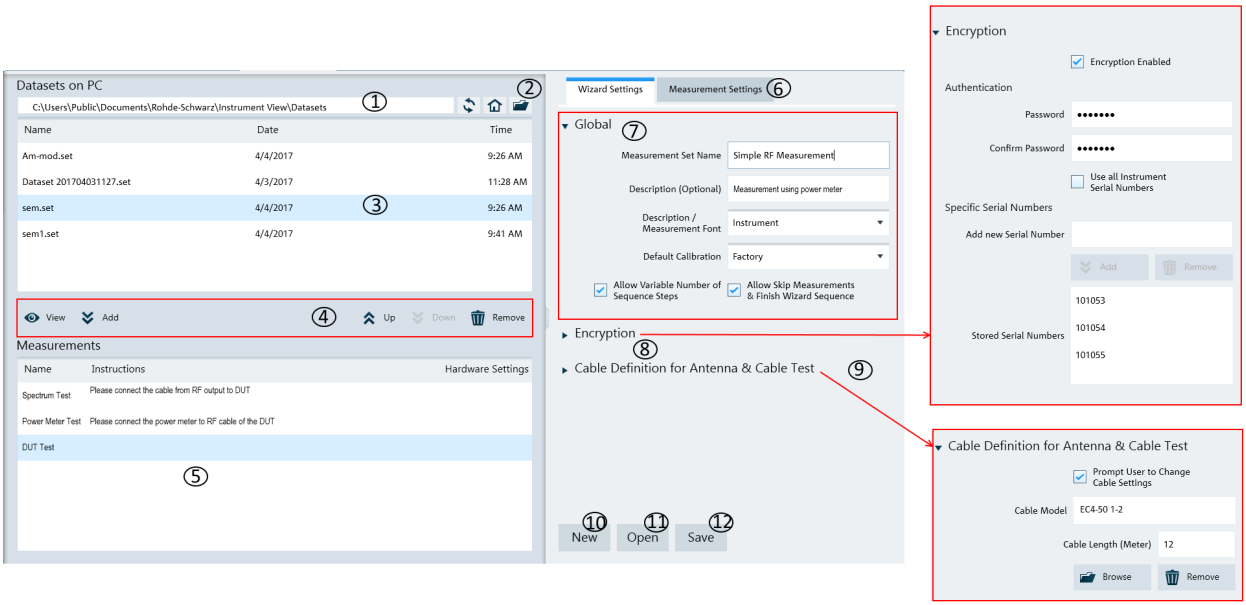
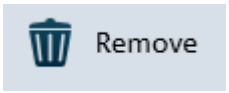


Figure 4-32: Wizard editor

1 = Homepage icon
2 = Opens the PC window explorer
3 = List of datasets that are available in the PC

4 = Navigation icon to preview, add, navigate and remove dataset in the measurement table list
5 = List of selected datasets used in the measurement table list. The "Name", "Instructions" and "Hardware_Setting" column are defined in the Measurement Settings dialog.
6 = Measurement settings tab
7 = Global dialog box
8 = Encryption dialog box
9 = Cable definition for antenna & cable test dialog box
10 = "New" button creates a wizard set for entry
11 = "Open" button loads an existing wizard set entry
12 = "Save" button saves the current wizard set entry

Navigation icon

Navigation icon	Descriptions
	Preview a selected dataset in the measurement table list.
	Add a selected dataset from the PC dataset list into the measurement table list.
	Navigate upward in the measurement table list.
	Navigate downward in the measurement table list.
	Remove a selected dataset from the wizard set.

Global

The "Global" dialog box provides the following settings that configure the wizard set:

- "Measurement Set Name"
  Name of the measurement wizard set. This field is displayed in the instrument as a read-only parameter.
- "Description (Optional)"
  Description of the measurement task. This field is displayed in the instrument as a read-only parameter.
- "Description / Measurement Font"
  Font type for on-screen instructions (Latin, Chinese/Japanese and Korean fonts are supported).
- Default Calibration
  Set the default calibration method use during the wizard measurement. See the respective instrument user manual for the calibration method information.
- "Allow Variable Number of Sequence Steps"
  If enabled, this field is configurable in the instrument and it allows you to remove steps from the measurement wizard set.

If not enabled, this field is displayed in the instrument as a read-only parameter.

- "Allow Skip Measurements & Finish Wizard Sequence"
  If enabled, this field is configurable in the instrument and it allows you to skip the measurement step or finished the measurement wizard set.
  If not enabled, this field is displayed in the instrument as a read-only parameter.

Encryption

The "Encryption" dialog box provides the encryption function to secure the edited measurement wizard set.

The encrypted wizard set is only visible in the instrument with serial number configured in the "Encryption" dialog.

To enable the "Encryption" dialog, activate the "Encryption Enabled" checkbox.

To limit the usage of the wizard set on a selective number of instruments, add the instrument serial number defined in the field of "Specific Serial Numbers".

Cable definition for antenna & cable test

The "Cable Definition for Antenna & Cable Test" dialog box configures the cable model and cable length used in the instrument antenna & cable test mode.

To enable a different cable characteristic after each individual measurement in a wizard sequence (such as to perform same measurement for different cables), enable the checkbox "Prompt User to Cange Cable Settings".

Measurement settings

The "Measurement" tab configures the individual dataset used in the measurement table list.

Navigate from the list of datasets in the measurement table list (see index 5 of Figure 4-32) and select the desired dataset for configuration.

Define the "Measurement Name" and describes the "Instructions" necessary for the measurement step.

Note: The description defined in the "Instructions" is displayed in the wizard message box during the exaction of the wizard set. See index 2 of Figure 4-34.

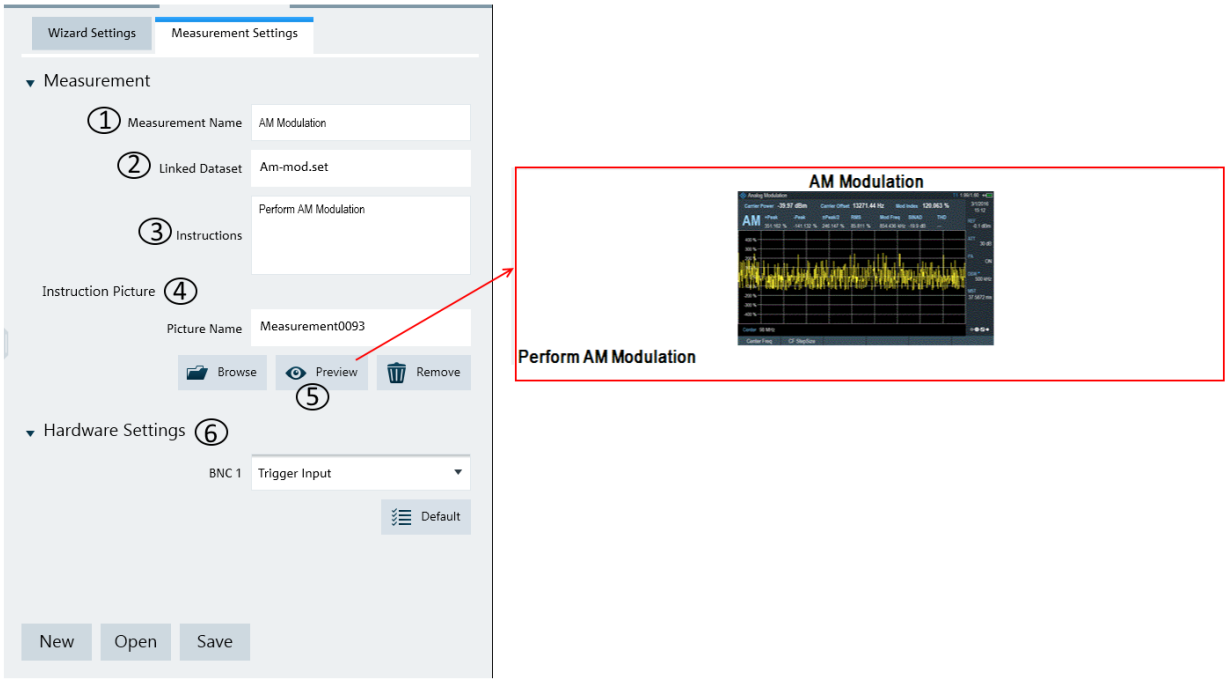


Figure 4-33: Measurement settings tab

1 = Define the measurement name of the selected dataset
2 = Identify the dataset filename that the measurement setting is linked to
3 = Define the instruction description displayed in the wizard message box
4 = Instruction picture dialog
5 = Preview the configured measurement wizard dialog
6 = Hardware setting to configure the instrument's BNC input ("Trigger Input" or "Reference Input")

Instruction picture

The "Instruction Picture" section allows you to display a graphical image during the execution of the measurement wizard set. See Figure 4-34.

To select the desired picture, select "Browse" button to open the PC window explorer and select the graphic image to use.

The "View" button allows you to preview the selected graphical image.

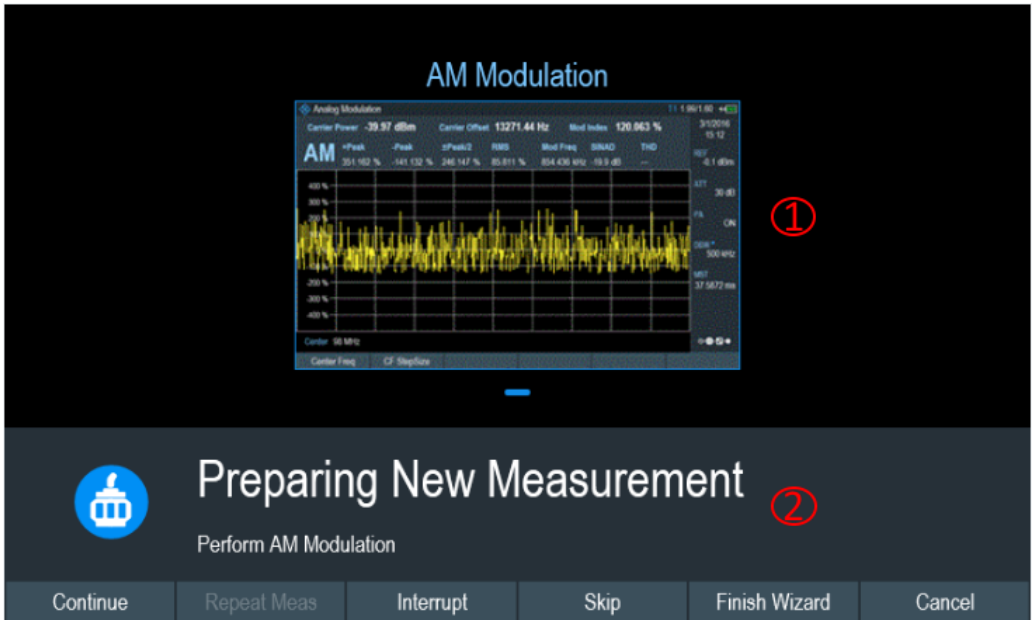


Figure 4-34: Wizard dialog box

1 = Instruction picture image
2 = wizard message box

4.6.11 Map Creator

Context Menu
Move the mouse scroll wheel to zoom in or zoom out on the map.

The "Map Creator" is only applicable for R&S FPH and R&S FSH4 product series.

The "Map Creator" menu allows you to create a customize map for the indoor mapping application in the instrument. The tool is divided into the map section and the setup section. The purpose of the tool is to generate a small archive of images including an IDM file for use on the instrument and in the maps workspace.

In addition to creating a map, you can also specify the exact geographical location of the area you are measuring. To do so, you can specify three GPS reference points in the entry field (see item 4 of Figure 4-35) . With a GPS referenced map, it provides the following useful features:

- The map created is automatically rotated with the north side faces up.
- The instrument calculates and displays the distance between measurement points (in meters or feet, depending on the regional settings).

- You are able to embed the collected data into maps with a larger scale. Thus, you are able to, for example, combine measurement data recorded with the "Outdoor Mapping" application and data recorded with the "Indoor Mapping" application in a single map. For more information, see "Collecting Map Data chapter" in the user manual.

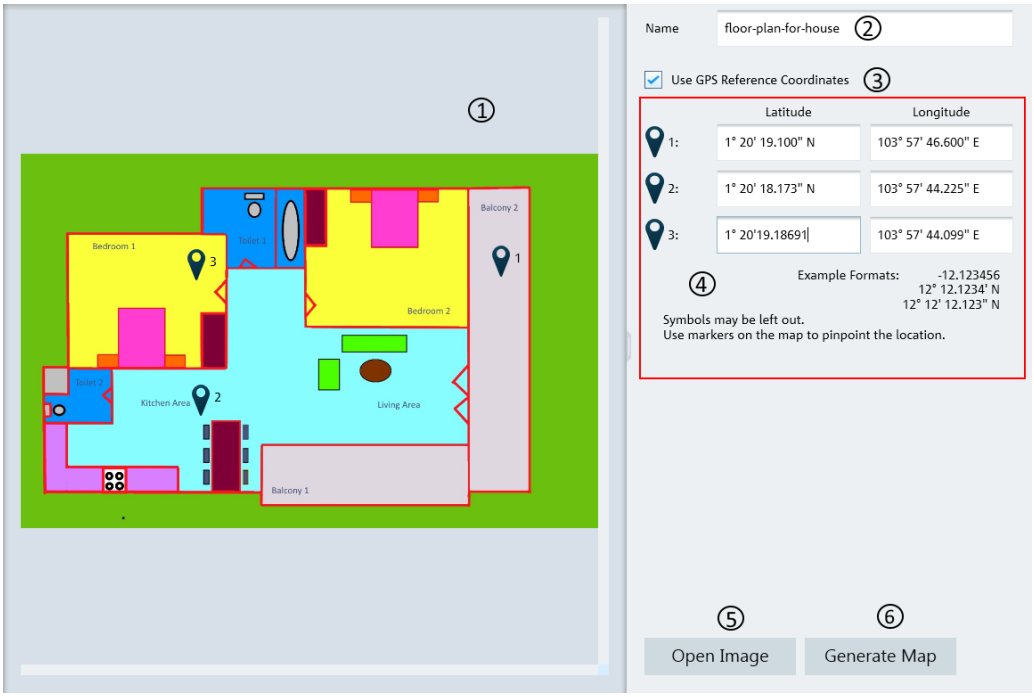


Figure 4-35: Map creator dialog box

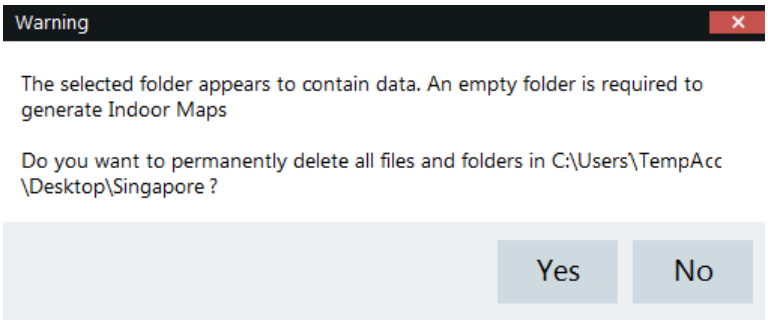
1 = Map section
2 = Map folder name
3 = GPS reference coordinate
4 = Entry fields for the GPS reference coordinates.
5 = Load image supporting file format: "*.png", ".bmp", ".tiff," ".gif", ".jpg"
6 = Generate map

GPS reference coordinates

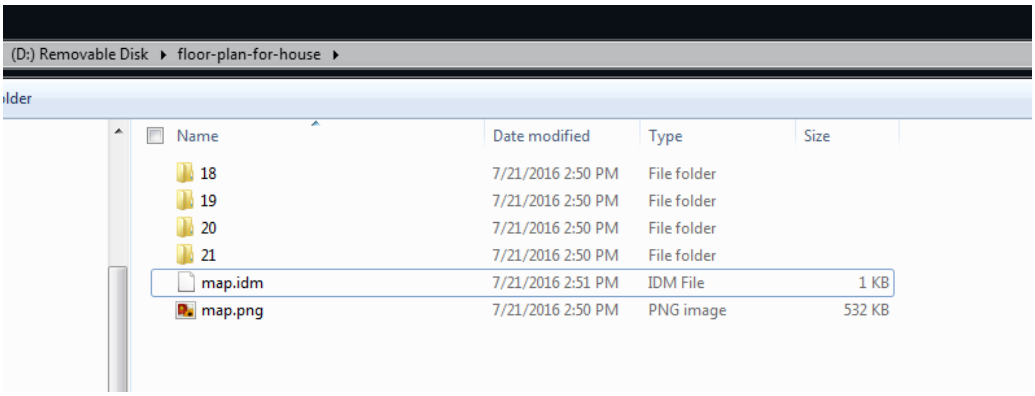
This GPS reference coordinate allows you to create a georeferenced map (with GPS coordinates) or a non-geo-reference map (without GPS coordinates). When enabled, three GPS reference coordinate positions ("Latitude" and "Longitude") are required to enter in the setup section with reference of the GPS targets shown on the map. You can move the GPS target on the map which represents the corresponding values of the GPS reference coordinates.

Generate map

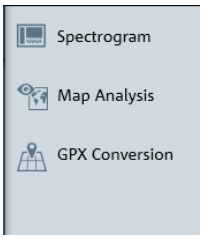
When generating the map, the R&S InstrumentView deletes all existing cotent in the selected folder.



The generated map data consists of different zoom level of the images stored in separate folders, a PNG file of the image and an IDM file of the map data.



4.7 Analyze the Instrument Dataset



The "Analysis" menu allows you to perform data analysis for instrument data collected from spectrogram and map measurement. It also allows you to export GPX file to KMZ and CSV file format.

4.7.1 Spectrogram

Spectrogram is only applicable for R&S FPH, R&S FSC, R&S FSH4 and R&S ZVH product series.

Context menu

Right-click on the spectrogram, vertical scrollbar or spectrum to access the following menus:

Spectrogram

- "Set time marker 1 here", "Set time marker 1 here" - Display a vertical blue line in the spectrogram.

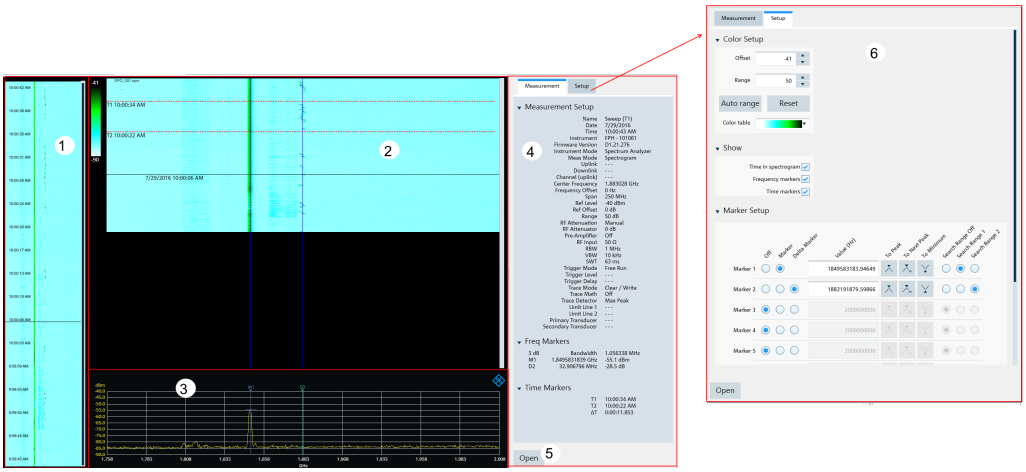
Vertical scrollbar

- See details in "Context Menu" on page 7.

Spectrum

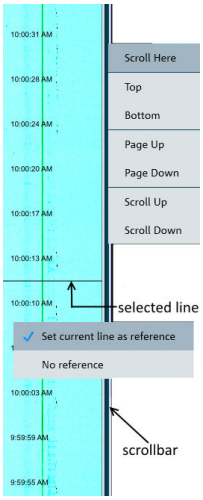
- "Reset Zoom", "Reset Move" - Reset the spectrum display to original zoom level or position.

The spectrogram provides a workspace to analyze the spectrogram which is also known as long time recording. The workspace is divided into five sections, each providing specific information and or means to analyze the spectrogram data further.



1 = Compression spectrogram
2 = Spectrogram section
3 = Spectrum section
4 = Measurement section
5 = Press "Open" button to load the spectrogram file
6 = Setup section

Compression spectrogram



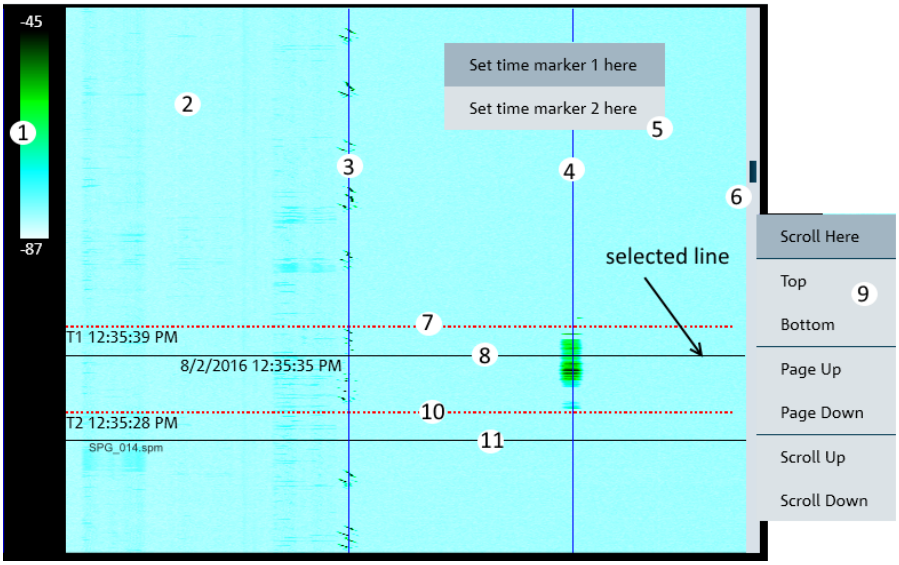
The compressed spectrogram displays a compressed overview of the recorded spectrogram data. In the compressed spectrogram view, a selected line is displayed showing the location of the part that is currently displayed in the spectrogram and the spectrum section. You can use the mouse to move the line in the compressed spectrogram to analyze the data in the spectrogram.

You can right-click on the compressed spectrogram to set the current line as reference value. When using the current line as a reference, the reference is subtracted from all the records in the compressed spectrogram and the color spectrum changed accordingly. You can also right-click on the scroll bar to display the different scrolling options to navigate the data in the compressed spectrogram view.

Upon loading the next spectrogram, the R&S InstrumentView will prompt you to save the generated compressed spectrogram file.

Spectrogram section

The spectrogram section shows a part of the recorded spectrogram in the highest time resolution, e.g. one line in a spectrogram file represents in one sweep on the spectrum section. You can change the spectrogram frequency resolution by holding the CTRL key and moving the mouse scroller in the spectrum view. For more information on the mouse behavior, see Table 4-6. The amplitude of the signal in the spectrogram view is displayed in color spectrum according to the configuration setup in the "Color Setup" dialog box"Setup section" on page 71.



1 = Display of color table
2 = Spectrogram section
3 = Display of marker 1 line
4 = Display of marker 2 line
5 = Context menu for spectrogram
6 = Scroll bar
7 = Display of T1 time-line
8 = Left-click on the mouse to display of current selection line. This line is synchronized to the information displayed in the compressed spectrogram and spectrum section.
9 = Context menu for vertical scrollbar
10 = Display of T2 time-line
11 = Indication of the spectrogram filename loaded

Spectrum section

The spectrum shows the spectrum at the current selected line in the spectrogram view. The spectrogram shows the amplitude as colors, the spectrum view shows the amplitude as Y deflection in the graph. It is possible to move the markers display, change and move the zoom area of the spectrum display by using the mouse. For more information on the mouse behavior, see Table 4-6

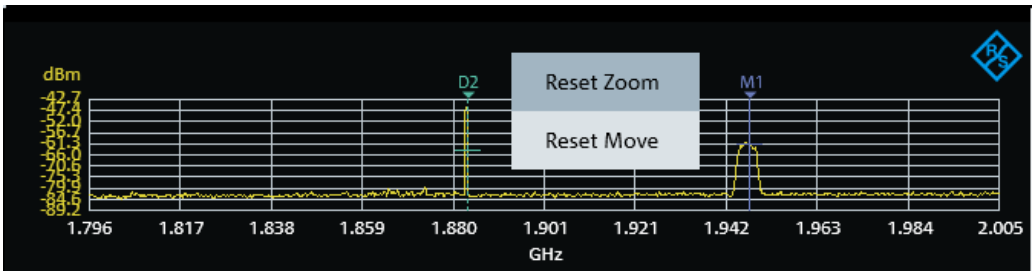
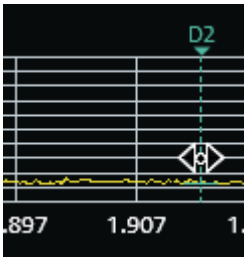
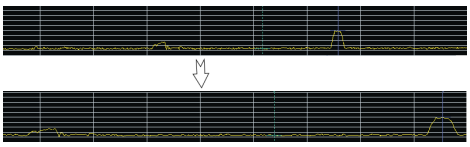
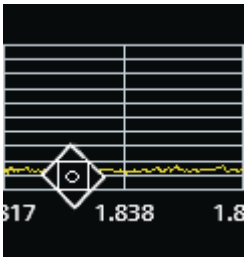
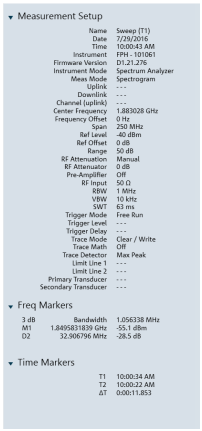


Table 4-6: Mouse behavior in spectrum section

Mouse behavior	Description
	Place the mouse icon over the marker line until the icon display changed. Hold and left-click on the mouse and drag to move the marker display.
	Place the mouse icon anywhere on the spectrum view, hold the CTRL key and move the mouse scroller to change the frequency resolution of the spectrum and spectrogram display.
	Place the mouse icon over the spectrum display until the icon display changed. Left-click and hold on the mouse key to change the spectrum position.

Measurement section



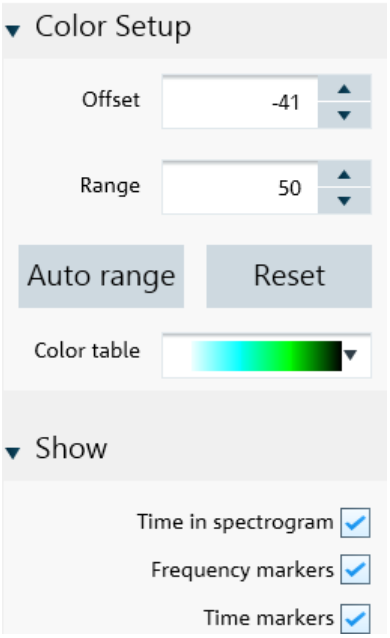
The measurement section consists of three subsections:

- Measurement setup
  The measurement setup contains all the setup properties required for specific measurement. The data displayed in this section is the same as the spectrum section.
- Frequency maker
  The data displays in the frequency marker corresponds to the settings in the "Marker Setup" configured in the setup section.
- Time marker
  The time markers section is used to display the time marker value and results as positioned in the spectrogram section.

Setup section

The Setup section consists of two sections:

- Viewer setup
  The viewer setup allows you to configure the display view ("Time", "Frequency markers" and "Time markers") in the spectrogram section and define the maximum reference level and range different for the color table.
  Using the "Auto range" function, you can automatically adjust the maximum reference level and the range different of the color table for optimum display. For more information, see "Working with the Spectrogram Result Display" in the user manual.



- Marker setup
  For more information, see "Marker Setup" on page 25.

4.7.2 Map Analysis

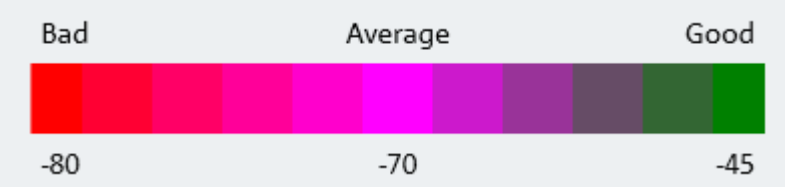
Map is only applicable for R&S FPH, R&S FSC and R&S FSH4 product series.

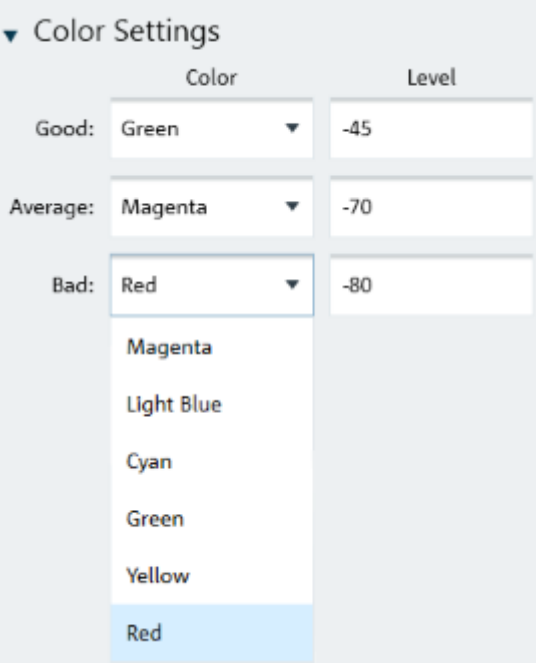
The "Map Analysis" menu allows you to view maps and overlay it with the signal strength level from the GPX file. The "Map Analysis" workspace is divided into the map section and the setup section.

1 = Map section
2 = GPX position ("X (Pixels)", "Y (Pixels)") of the measurement
3 = Indices of the measurement
4 = Signal strength level of the measurement
5 = Press "Load Map" to open file browser to search for IDM or PRJ map file
6 = Press "Load GPX" to load the GPX file
7 = Legend of the color spectrum used for signal strength level
8 = Color settings dialog
9 = Enable / disable the display of GPX index on the map
10 = Enable / disable the display of signal strength level on the map
11 = GPX list loaded from the GPX file. The highlighted GPX list is shown blinking on the map.
12 = Position the legend on the exported image
13 = Press "Export Image" to file format (*.png, *.gif, *.bmp, *.jpg, *.tiff, *tif)
14 = Export the "GPX List" to CSV format

Color settings

The color settings dialog allows you to select the color representing the signal strength level to display on the map. After the configuration, the legend of the color spectrum reflects the color changes accordingly.





4.7.3 GPX Conversion

GPX conversion is only applicable for R&S FPH, R&S FSC and R&S FSH4 product series.

Context Menu

Right-click on the GPX list to access the following menus:

- "Include All" - Include all the GPS coordinates in the GPX list
- "Exclude All" - Exclude all the GPS coordinates in the GPX list

The "GPX Conversion" provides a workspace where you can merge different GPX files into a single collection of measurement list and export the merge GPX data to KMZ or CSV file format. You can then edit the data within this collection by adding "Name" and "Description". Furthermore, you can also modify the colorized representation of the GPS positions for use in Google Maps.

The tool is divided into the grid section and setup section.

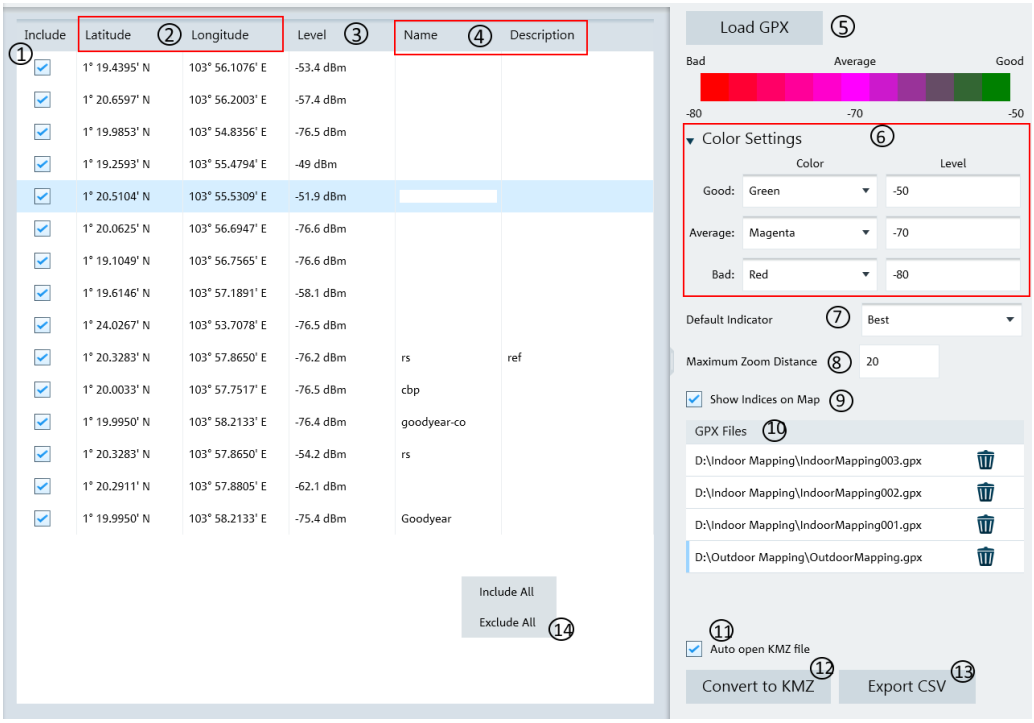


Figure 4-36: GPX conversion dialog box

1 = Checkbox to include or exclude the measurement indices in the CSV or KMZ file
2 = GPS position of the measurement ("Latitude" and "Longitude")
3 = Measured result of the measurement
4 = Editable field ("Name" and "Description")
5 = Load GPX file with valid GPS coordinates
6 = Color setting dialog
7 = Default indicator determines the preferred visible measurement when multiple measurements are grouped at a certain zoom level ("Best", "Average", "Worst")
8 = "Maximum Zoom Distance" determines the number of zoom layers stored in KMZ file. A higher zoom distance means fewer zoom layers and vice versa
9 = Checkbox to enable or disable the display of measurement indices on the map
10 = GPX files list where it is possible to remove GPX files from the list
11 = Checkbox to auto-open the KMZ file in Google Earth after creation
12 = Convert the GPX file list to KMZ file format
13 = Export the GPX file list to CSV file format
14 = Context menu in GPX list

Color setting dialog

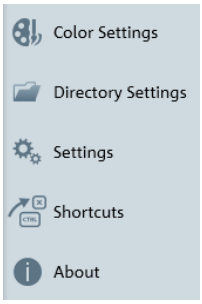
You can define the different color used to represent the level measured at the GPS position.

Available colors for selection:

- "Magenta"
- "Light Blue"
- "Cyan"
- "Green"
- "Yellow"

- "Red"

4.8 Options



The "Options" menu allows you to configure the application preference such as the color settings of the trace element, selection of instrument type family, directory path setting , display of keyboard shortcuts and software information.

4.8.1 Color Settings

The "Color Settings" dialog provides settings for the color displayed on the different trace elements in the trace window. See Figure 4-37.

It provides settings on the following:

- Background
- Grid line
- Text display on the trace window
- Up to four trace lines
- Up to four memory trace lines
- Up to four maximum trace lines
- Up to four minimum trace lines
- Up to four average trace lines
- Indicator line
- Display line
- Marker and delta marker line
- Upper and lower limit line
- Tx and adjacent channel indicator

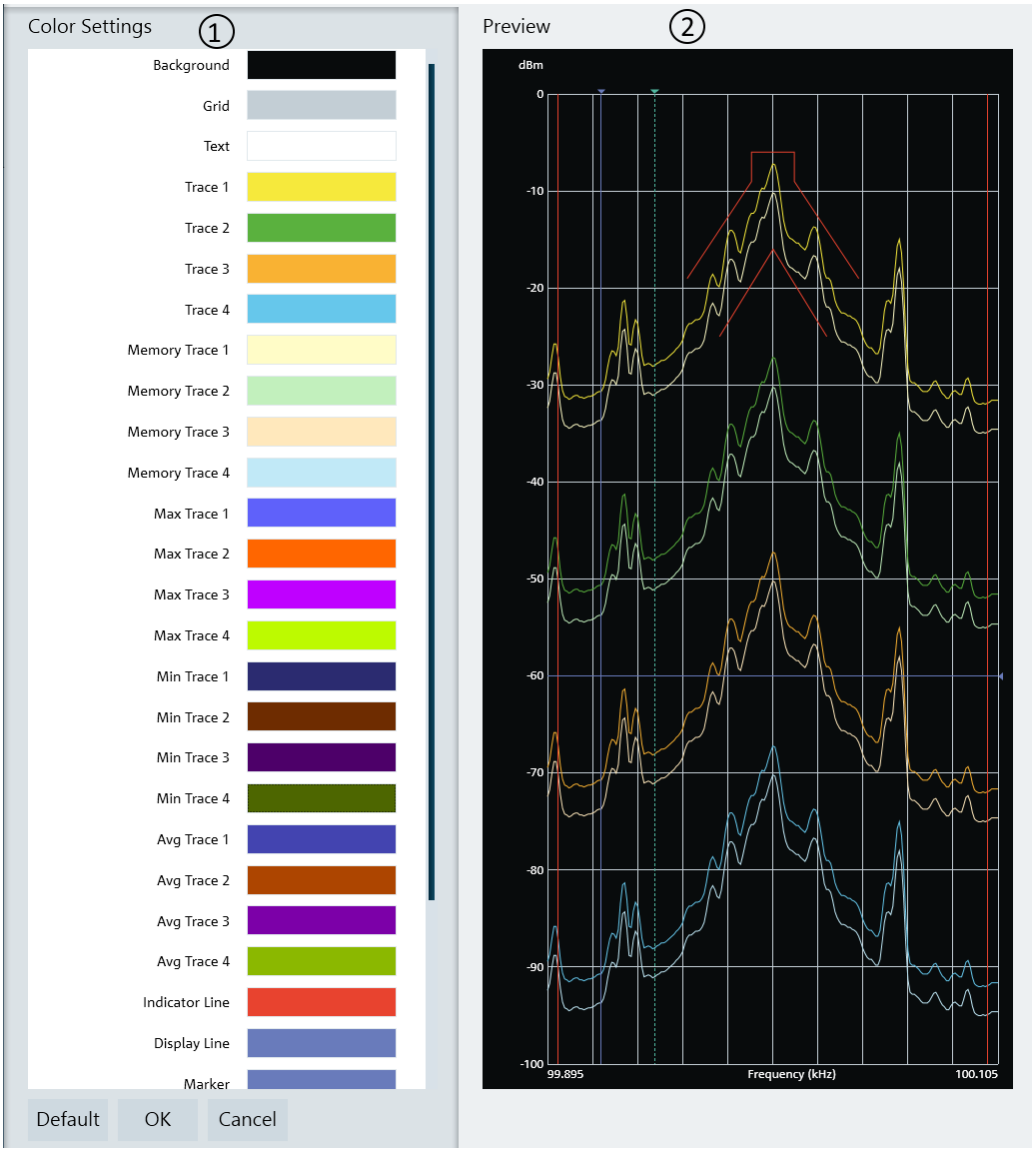


Figure 4-37: Color settings dialog

1 = "Color Settings" menu displays each trace element color in the trace window
2 = "Preview" window displays each trace element color in the trace window

Select the desired trace element in the "Color Settings" menu and the "Color selection" dialog is displayed for configuration. See Figure 4-38.

There are a few ways to change the color settings in the "Color Selection" dialog:

- Select the desired color settings in the color display area
- Select the desired brightness setting in the brightness level indicator
- Change the RGB color codes
- Change the Hex color codes

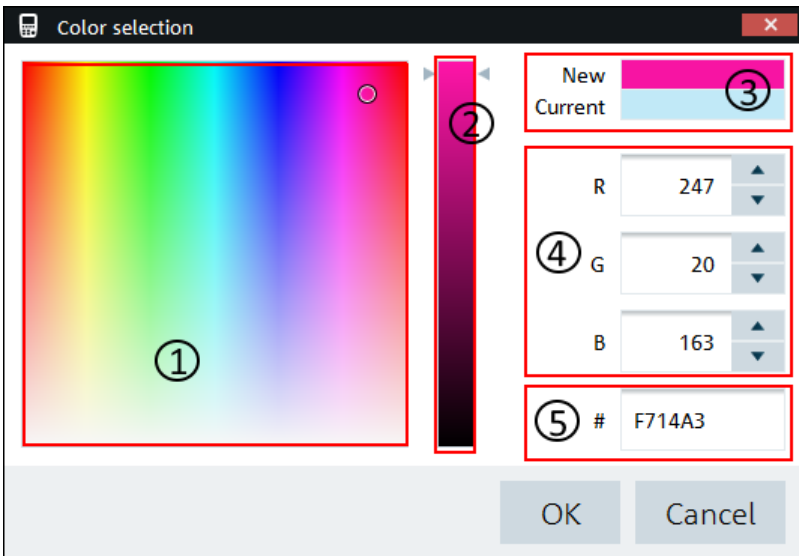


Figure 4-38: Color selection dialog

1 = Color display area
2 = Brightness settings indicator
3 = Color preview area
4 = RGB color codes
5 = HEX color codes

Select the "Default" button to restore the default settings of the trace element color. See Figure 4-37.

4.8.2 Directory Settings

The "Directory Settings" dialog provides the list of default path directories setting for the different type of files used in the application.

To change the path directories setting, double-click the desired file type to configure the directory setting.

Upon selection, the "Browse For Folder" dialog is displayed to configure the path directory setting. See Figure 4-39.

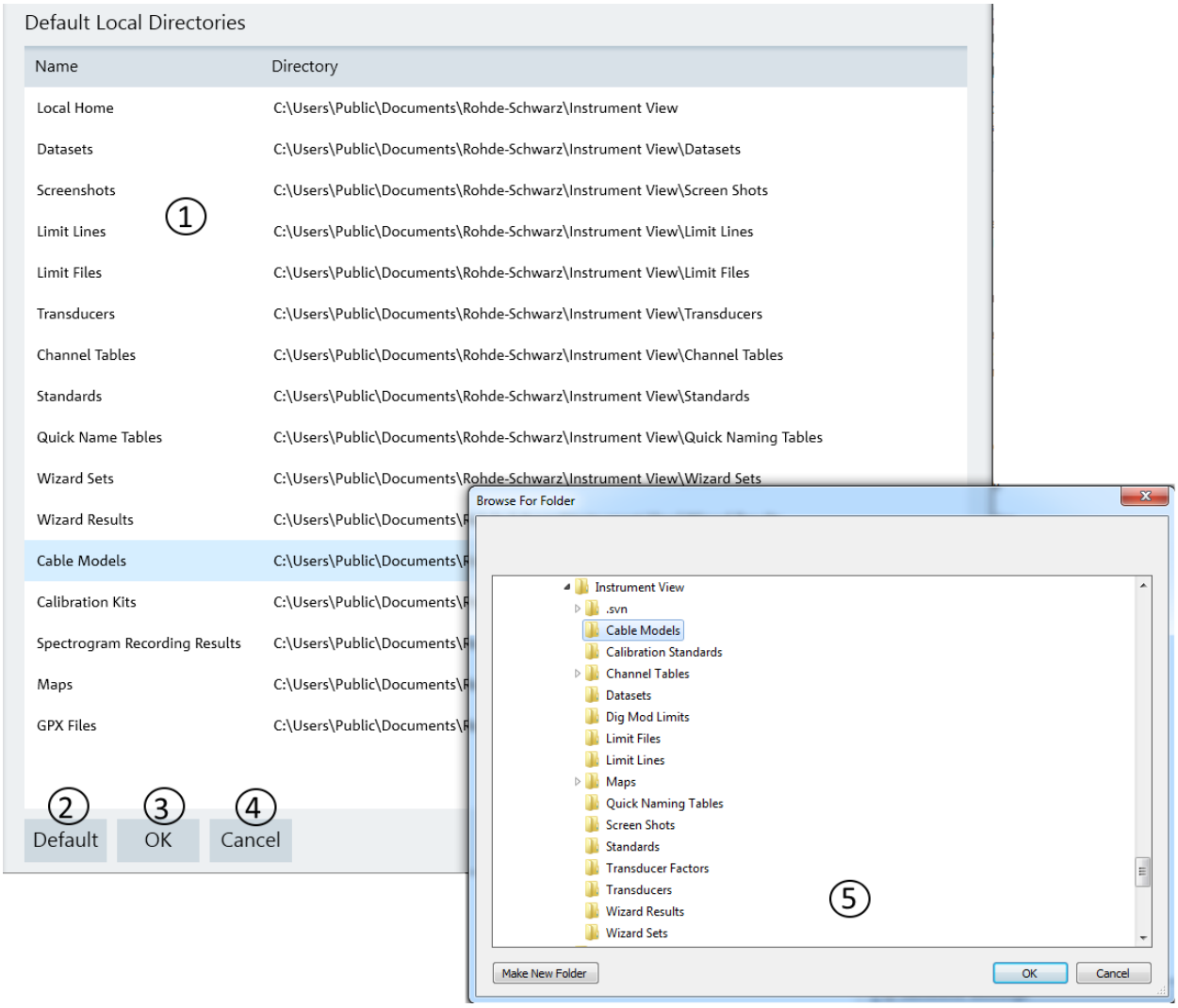


Figure 4-39: Directory settings dialog

1 = List of the different file types directory setting
2 = Press "Default" button to reset the path directory to default settings
3 = Press "OK" button to confirm the settings of the path directory
4 = Press "Cancel" button to exit the path directory settings
5 = File browser for path directory selection

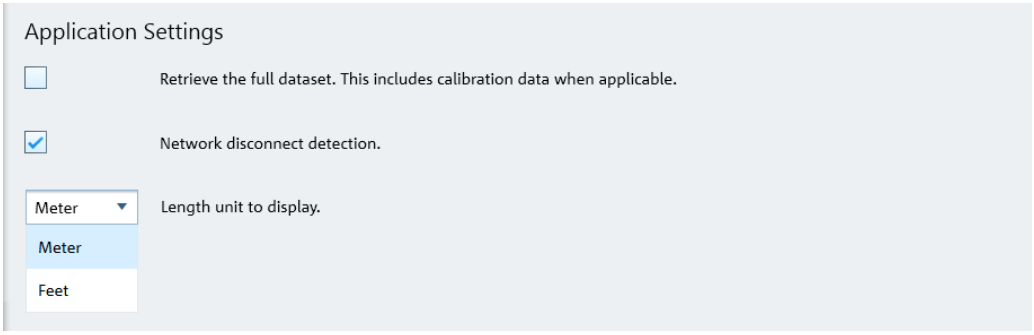
4.8.3 Application Settings

By default, the calibration data (if applicable) is not included in the saved dataset.

To retrieve the full dataset, enable the checkbox to retrieve the full dataset including the calibration data when applicable.

By default, the "Network disconnect detection" status is checked. When enabled, the R&S InstrumentView reflects the network connection status accordingly. See Table 3-1.

The length unit displays the desired unit shown in the calibration data (if applicable).



4.8.4 Keyboard Shortcuts

There are several shortcut keys that you can use to navigate in the application.

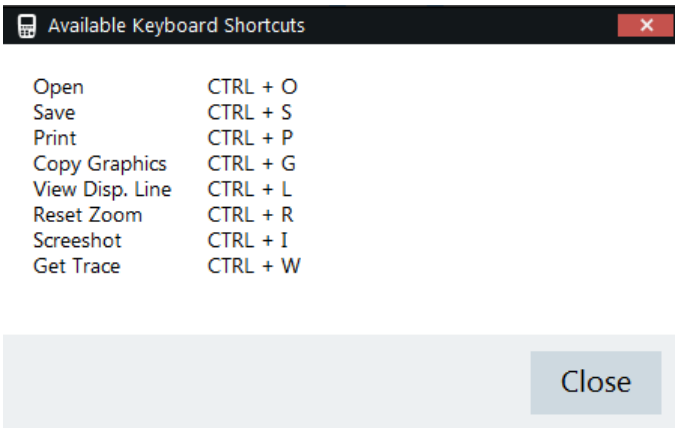


Figure 4-40: Shortcut keyboard

4.8.5 Command-Line Tool

Command-line tool is only applicable for R&S ZVH & R&S ZPH product series.

The command-line tool is run via the command prompt supported by PC's running Windows 7, 8 and 10.

The tool supported two types of command:

- ConvertToZPH
  Convert individual dataset or datasets in a directory to compatible dataset of the desire device type.

Example: Example syntax for the ZVH -> ZPH converter:

```
InstrumentView.exe –ConvertToZPH ”input.set” ”output.set”
InstrumentView.exe –ConvertToZPH ”inputDirectory” ”outputDirectory”
```

- ConvertToCSV
  Convert individual files to CSV compatible format

Example: Example syntax for the Dataset -> .CSV converter:

```
InstrumentView.exe –ConvertToCSV ”input.set” ”output.csv”
```

4.8.6 About

See "About the software information" on page 5.

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