

R&S®PR100

Portable Receiver

Getting Started



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ROHDE & SCHWARZ

Radiomonitoring & Radiolocation

Getting Started

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The following abbreviations are used throughout this manual: R&S®PR100 is abbreviated as R&S PR100.

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1 Preparation for Use

This section describes the basic steps to be taken when setting up the R&S PR100 for the first time.

1.1 Unpacking the R&S PR100

The following section describes the steps to set up the R&S PR100 and to connect external devices including the charger.

It also describes typical uses by means of screenshots.

The R&S PR100 is supplied in form-fit packaging consisting of an upper and lower shell. The two shells are held together by a sleeve which encloses the packaging.

The packaging contains all accompanying accessories.

- To unpack the R&S PR100, remove the sleeve.
- Remove the R&S PR100 and the accessories.
- Remove the protective film from the screen.

1.2 Setup

The R&S PR100 Portable Receiver is designed for stationary, in-vehicle and in particular for portable use.

Depending on operating conditions, the R&S PR100 can be set up perfectly for both operation and the display's viewing angle.

When used as a desktop instrument, the R&S PR100 can either lie flat or stand up using the folding stand on the back.

For portable use, it is best to attach the R&S PR100 to the chest carrying strap. All the control buttons are then easily accessible and the display can be easily read.



1.2.1 Inserting the Battery

The R&S PR100 is fitted with a lithium ion battery. The R&S HA-Z206 battery pack has a charging capacity of 6.75 Ah.

The battery is inserted into the bottom right of the R&S PR100.

The cover must first be pulled downwards to unlock it and then folded upwards to open it.

The battery is NOT fitted in the R&S PR100 on delivery and must therefore be fitted before the R&S PR100 can be used for the first time.



1.2.2 Connecting to the Power Supply

The R&S PR100 can be powered using the mains power adaptor or the internal battery supplied. When fully charged, the built-in lithium ion battery permits approximately 3.5 hours of operation. When the R&S PR100 is delivered, the battery may be completely discharged. Should you wish to use it without a mains power connection you will therefore need to charge it. Charging time is approximately 4 hours with the R&S PR100 switched off. During operation using mains power, the R&S PR100 simultaneously charges the internal battery.

Insert the power adaptor plug into the POWER ADAPTOR socket on the left-hand side of the R&S PR100 until it clicks into place. Then connect the adaptor to the mains power socket.

The adapter voltage range is 100 V to 240 V AC / 50 Hz to 60 Hz.

The R&S PR100's DC supply range is +15 V DC +/-10%, maximum 2 A.

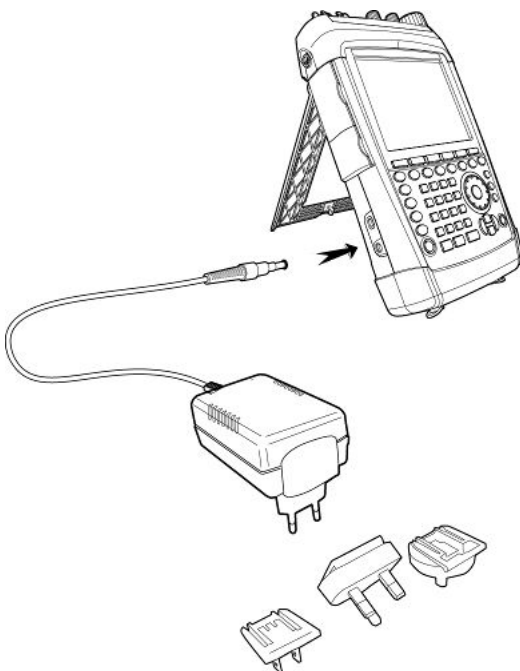
⚠ CAUTION

The R&S HA-Z201 power adaptor supplied should only be used to operate the R&S PR100 or to charge the battery using mains power.

Ensure that the mains supply voltage is compatible with the voltage specified on the adaptor before use. Attach the appropriate connector before inserting the adaptor into the AC power outlet.

The power adaptor R&S HA-Z201 must not be used outside its operating temperature range of 0°C to 45°C. Outside this temperature range, an external DC power supply must be provided by the user.

The external DC power supply must be in accordance with IEC / EN / UL / CSA 60950-1 or IEC / EN / UL / CSA 61010-1 (current date of issue)



1.2.3 Charging the Battery

The R&S PR100 is equipped with a lithium ion battery. The battery permits approximately 3.5 hours' operation at room temperature when it is fully charged.



On delivery, the R&S PR100's battery is not fully charged. The battery therefore needs to be charged before the R&S PR100 can be used for the first time.

If the unit is stored for an extended period, self-discharge will reduce the battery's charge. The battery should therefore be charged before use if it is intended to be the sole power source for an extended period.

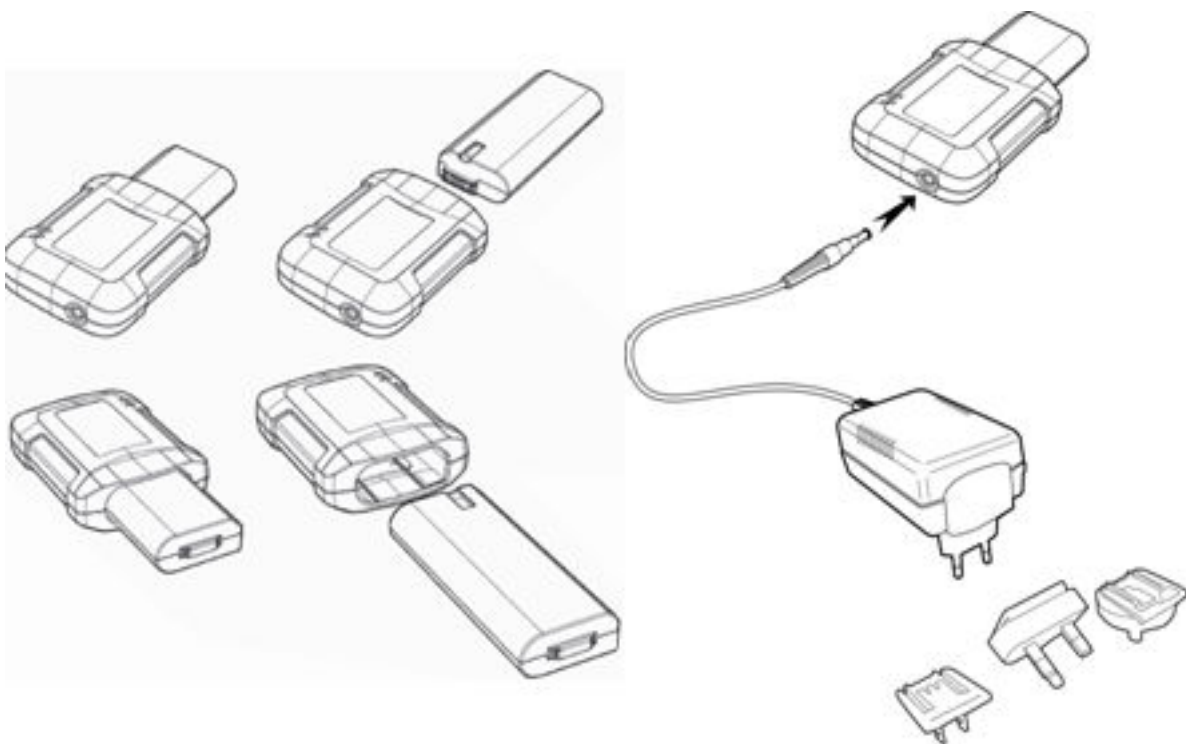
The charge status of the battery pack is shown on the R&S PR100's display.

The battery can either be charged directly in the R&S PR100 by using the supplied adaptor or with the optional external R&S HA-Z203 battery charger.

Charging takes approximately 7 hours with the R&S PR100 switched on.

For faster charging, switch off the R&S PR100 during charging. Charging takes approximately 4 hours with the R&S PR100 switched off or by using the external charging unit.

To charge the battery externally, place it in the external R&S HA-Z203 battery charger and charge it using the plug-in power adaptor.



The plug-in power adaptor is the same R&S HA-Z201 adaptor used for the R&S PR100.

1.2.4 Switching on the R&S PR100



To switch on the R&S PR100, press the grey button at the bottom left of the front panel.

When the R&S PR100 is switched on, the settings in use when it was last switched off are loaded.



Should you wish to start the R&S PR100 with factory settings, the LOCK key should be pressed and held for approximately 5 seconds when you switch the unit on.

1.2.5 Ambient and Operating Conditions

The R&S PR100 will operate reliably in the following ambient and operating conditions:

Maximum humidity	95 %
Rated operating altitude max	4600 m
Transport altitude max	12000 m
Excess voltage category	2
Pollution level	2

2 Front and Top Panel Elements



Fig. 2-1: Front View

1 AUX2 / Ext Ref. / IF interfaces	8 Input keys
2 LAN and USB interface	9 Unit keys
3 Softkeys	10 Cursor keys
4 Function keys	11 Key lock
5 Function keys	12 Rotary knob

6 (Alpha-)numeric keypad	13 Memory access keys
7 On/off switch	14 SD Card slot



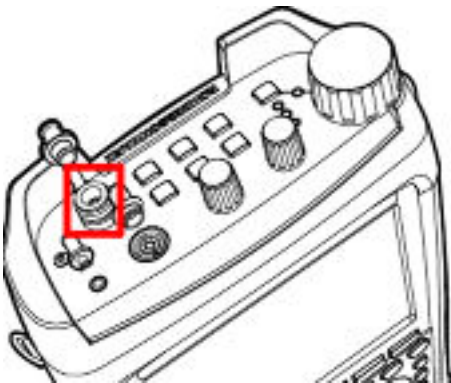
Fig. 2-2: Top View

15 Antenna Connector	19 MGAIN, SQL, Tone Control
16 Function Keys	20 Volume Control
17 Key Lock	21 AUX1 Connector
18 Flywheel Knob	22 Headphone

2.1 R&S PR100 Connectors

The R&S PR100 has the following connectors:

2.1.1 RF Input

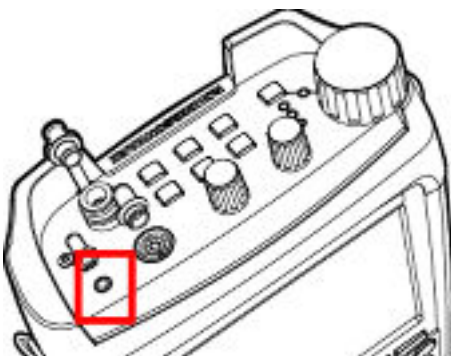


Connect the RF input to the antenna using a cable with an N connector. Make sure that the input is not overloaded.

⚠ CAUTION

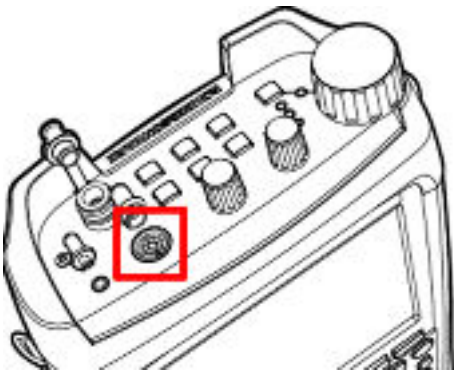
The maximum permissible continuous power at the HF input is +20 dBm (100 mW). The maximum permissible DC voltage at the HF input is 0 VDC.

2.1.2 Headphone Connector



A 3.5 mm stereo socket is provided for headphones. The connector's internal resistance is approximately 100 Ω .

2.1.3 AUX1 IN/OUT (Top)



External control signals can, for example, be fed to the R&S PR100 via the AUX1 IN/OUT connector

2.1.4 AUX2 IN/OUT (Side)



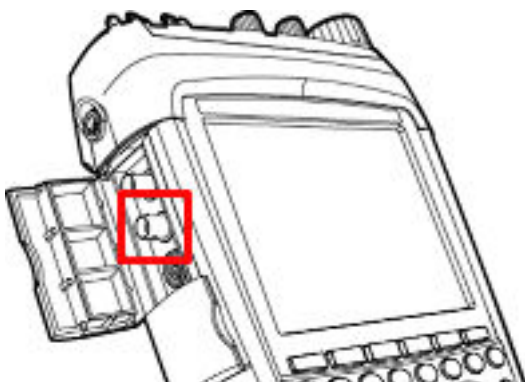
Control signals for measurements triggered externally can be fed in via the AUX2 input/output connector (e.g. for coverage measurement applications).

2.1.5 External Reference Input



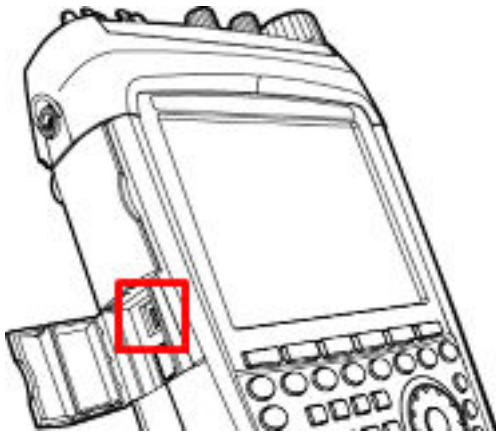
A 10 MHz reference signal for frequency synchronization is received via the EXT REF BNC socket. The level for the reference signal must be greater than 0 dBm.

2.1.6 IF Output



The unregulated 21.4 MHz IF signal is transmitted via the IF OUT BNC socket.

2.1.7 USB Interface



The R&S PR100 is equipped with a USB1.1 interface for RNDIS connection (alternative network connection) to the R&S PR100

2.1.8 LAN interface

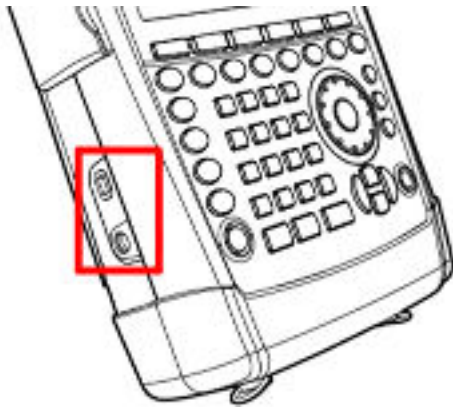


The R&S PR100 is equipped with a 10/100 Base T LAN interface for rapidly reading data stored on the SD card or for operating the R&S PR100 remotely.

⚠ CAUTION

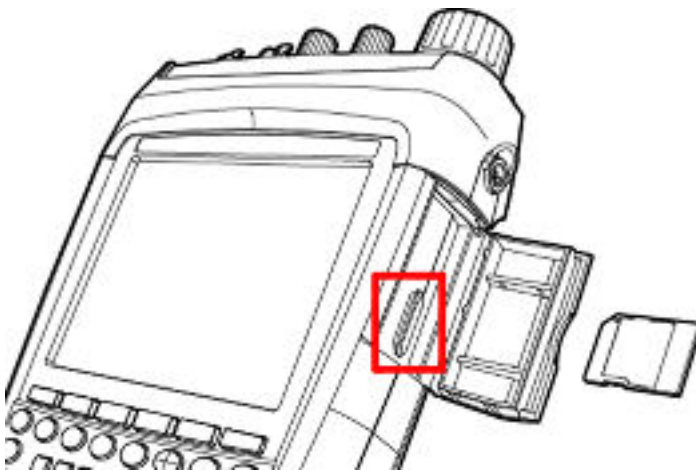
In order to comply with electro-magnetic compatibility guidelines (R&TTE), only LAN cables shorter than 3 m may be used (see recommended accessories).

2.1.9 Mechanical Hardware Protection



Mechanical hardware protection for the R&S PR100 at a workstation can be provided by installing a Kensington lock in the R&S PR100's housing.

2.1.10 SD Memory Card



The SD card for storing measurements or user settings is inserted into the upper right side of the R&S PR100.

3 Operation

This section provides a brief introduction to working with the R&S PR100 device. The operating manual on the CD ROM provides an in-depth explanation of the basic operating steps, for example selecting menus and setting parameters. The manual also describes the layout of the screen and the information displayed on it.

3.1 Turning on the R&S PR100 for the First Time

3.1.1 Screen Settings

The R&S PR100 screen is a 6.5" VGA display. The brightness of the backlight can be adjusted between 0% and 100%.

To obtain a balance between battery operating time and screen display quality, set backlighting to the minimum level necessary.



The position number of the keys is given in brackets after the key name in the following text. (see [figure 2-1](#)), e.g. LOCK key (11).

Setting the backlight

- Press the CONF key (5).
- Press the GENERAL softkey.
- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Display Backlight" line and press ENTER.
- Change the backlight brightness (between 0% and 100%).

Setting the display color scheme

- Press the CONF key (5).
- Press the GENERAL softkey.
- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Display Color Scheme" line and press ENTER.

- Select the color scheme.
- Confirm the setting by pressing ENTER.

3.1.2 Country-Specific Settings

The R&S PR100 supports multiple languages and can display text in the language of your choice.

Softkey lettering is always in English. The default setting (factory setting) is also English.

Operation

- Press the CONF key (5).
- Press the GENERAL softkey.
- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Language" line and press ENTER.
- Select the language.
- Restart the device for the language change to totally take effect.

3.1.3 Setting the Date and Time

The R&S PR100 has an internal clock which can, for example, provide stored data records with a date and time stamp. The date and time can be adjusted by the user.

Setting the Local Date

- Press the CONF key (5).
- Press the GENERAL softkey.
- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Local Date" line and press ENTER.
- Use the numeric keypad (6) to enter the new date.
- Confirm the date setting by pressing ENTER.

Setting the Date Format

- Press the CONF key (5).
- Press the GENERAL softkey.

Turning on the R&S PR100 for the First Time

- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Date Format" line and press ENTER.
- Select either the "dd/mm/yyyy" or "mm/dd/yyyy" date format.
- Confirm the date format setting by pressing ENTER.

Setting the Local Time and Timezone

- Press the CONF key (5).
- Press the GENERAL softkey.
- Use the rotary knob (12) or cursor keys (10) to scroll down to the "Local Time" or "Time Zone" line and press ENTER.
- Use the numeric keypad (6) to enter the new time or time zone.
- Confirm the setting by pressing ENTER.



Note: Invalid minutes are displayed in inverse color and need to be corrected by the user.

3.1.4 Demodulating a Channel

To analyze the content of a channel, the channel can be demodulated and the audio information can be output on the loudspeaker. The required frequency is set using the numeric keypad (6). The current number input is automatically assigned to the center frequency during fixed frequency operation.

The fixed frequency mode is set by the key sequence

SCAN (5) – F1 (3) – Selection "Mode:FFM",

followed by

DISP (5) – F1 (3) – Selection "RX+Spectrum"

For demodulation, select the following settings:

- Set a demodulation range of 120 kHz using the BW+ or BW- key (4) (for FM modulation using a radio transmitter as an example)



Fig. 3-1: Set the demodulation range

Turning on the R&S PR100 for the First Time

The maximum possible demodulation range is 500 kHz.

- Select FM demodulation using the MOD + or MOD - key (4)



Fig. 3-2: Set the demodulation type

The demodulated audio signal will now be output on the loudspeaker. The audio volume can be adjusted using the left rotary knob (20) on the top of the R&S PR100 (see [figure 2-1](#)).

The chosen demodulation bandwidth can also be displayed graphically in a semi-transparent color using the following steps:

- Press CONF (5) key.
- Press softkey F3 (Display).
- Use the rotary knob (12) or cursor keys (10) to scroll down to "Demodulation Bandwidth Bar" line and press ENTER.
- Select whether to turn on or off.
- Confirm the setting by pressing ENTER.

After turning on, the demodulation bandwidth will be displayed in the spectrum.

Turning on the R&S PR100 for the First Time

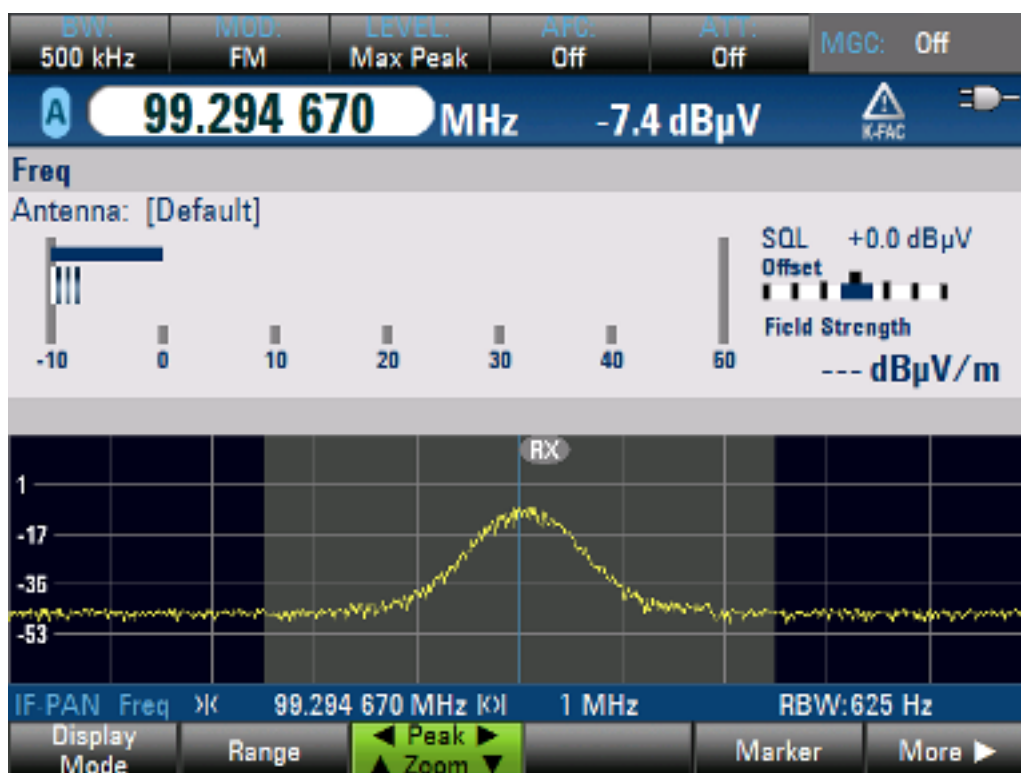


Fig. 3-3: IF- panorama with demodulation bandwidth

Activating the adjustable noise limiter (Squelch)

- Press the RX key (5)
- Press the softkey F4 (SQL)

Noise limitation can be adjusted using the center rotary knob (19) on the top of the R&S PR100. The squelch value is displayed graphically as a horizontal blue bar and numerically in dBμV (noise limitation affects the R&S PR100's demodulation path).

If the reception level is higher than the squelch value (audible audio) this is indicated by the sun symbol in the top right corner, when audio is not muted.

Turning on the R&S PR100 for the First Time

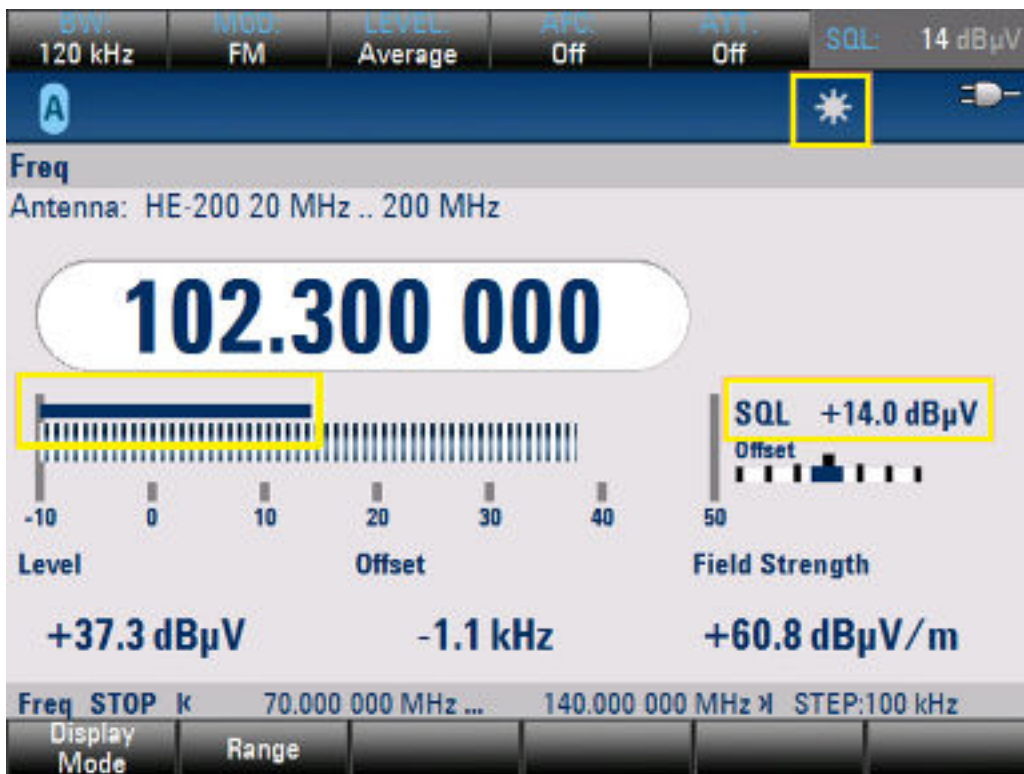


Fig. 3-4: Squelch value is displayed as a blue bar

Automatic Frequency Control (AFC)

AFC can be used for easy demodulation of signals with an unstable frequency:

- Press the AFC key (4)

Attenuator

In the event of strong input signals, which may cause intermodulations, an attenuator can be switched into the reception path:

- Press the ATT key (4)

This attenuator is only effective for reception frequencies between 20 MHz and 3.5 GHz. When the attenuator is switched on, it bypasses the pre-amplifier.

Activation or Deactivation of Audio

There are two different ways of activating or deactivating the audio output.

1. Assign a user key with MUTE:

- Press CONF (5) key

Turning on the R&S PR100 for the First Time

- Press the softkey F4 (General)
- Configure either the "User Key 1" or "User Key 2" to "Audio Mute On/Off"

2. MUTE via LOCK:

- Press the LOCK key
- Press the softkey F3 (Audio Mute)

The crossed loudspeaker symbol indicates the actual R&S PR100's status.

3.1.5 Center Frequency Level Measurement

The level of the signal received on the set center frequency is constantly measured and output in dBμV or dBm.

Change the display from dBm to dBμV:

- Press CONF (5) key
- Press the softkey F3 (Display)
- Select the "Level Unit" line and press ENTER
- Choose dBm or dBμV.

The display area for the level axis can be adjusted:

- Press the DISP key (5)
- Press the softkey F2 (Range)

The lower threshold and the dynamic range of the display can be adjusted using the popup menu.

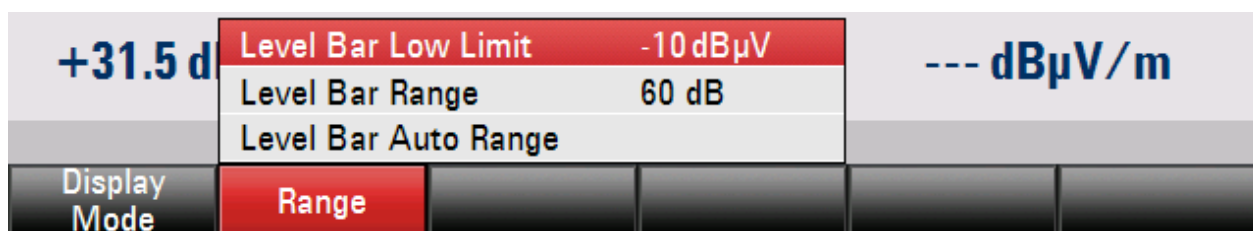


Fig. 3-5: Adjust the display area for the level display

Level Detectors

Various detectors are available for level measurement: AVG, RMS, SAMPLE and MAX PEAK. The Level key can be used to switch between the individual detectors:

Turning on the R&S PR100 for the First Time

- Press the LEVEL key (4)

The detectors adjustable using LEVEL influence the level measurement and the demodulation path only, not the spectral path.

Setting the measurement time:

- Press the CONF key (5)
- Press the RX softkey (F1)
- Use rotary knob (12) to navigate to "Measure Time Mode" line and press ENTER
- Set "Measurement Time Mode" to Manual



The measurement time "Default" is not a fixed time, but is adapted automatically to the bandwidth.

- The R&S PR100 "Measurement Time" line can now be set within a range of 500 μ s to 900 s.

The appropriate R&S PR100's demodulation bandwidth for the signal must be selected for correct level measurement, i.e. a 120 kHz wide signal must be measured by setting demodulation bandwidth of at least 120 kHz or above.

3.1.6 Field Strength Measurement



In order to carry out a field strength measurement the option R&S PR100-FS (Order number: 4071.9506.02) has to be installed.

To measure the signal's field strength, the input level in dB μ V is converted into the field strength in dB μ V/m using the antenna factor for the antenna in operation. The required antenna factor table must first be selected to perform this conversion:

- Press the CONF key (5)
- Press the softkey F6 (Antenna)
- Select the required antenna using the arrow keys (10) or the rotary knob (12) and confirm by pressing the F3 (Select) softkey

Turning on the R&S PR100 for the First Time

The antenna factors for the portable antennas R&S HE200 and R&S HE300 are already pre-installed when activating the option R&S PR100-FS.

Antenna factor tables can be edited and exchanged between PC and R&S PR100 by means of the PRView software, which is included on the CD delivered with the R&S PR100 or the Rohde&Schwarz website.

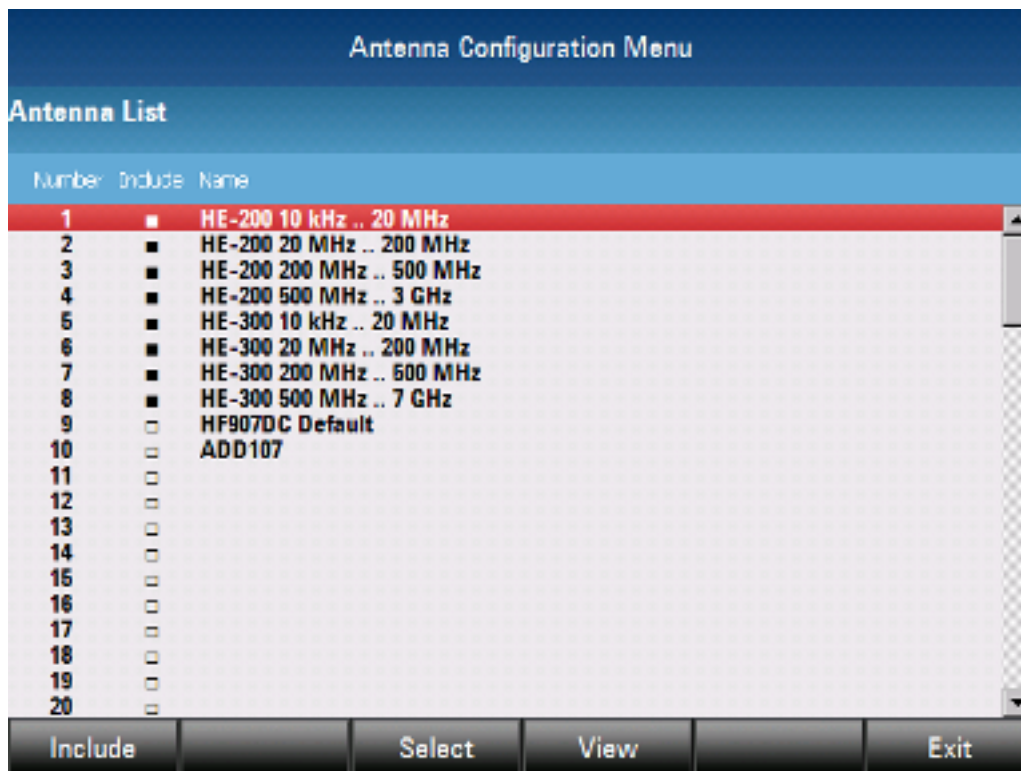


Fig. 3-6: Antenna list

Select the antenna factor table using F3 (Select).

The current measured field strength is displayed in dB μ V/m.

Turning on the R&S PR100 for the First Time

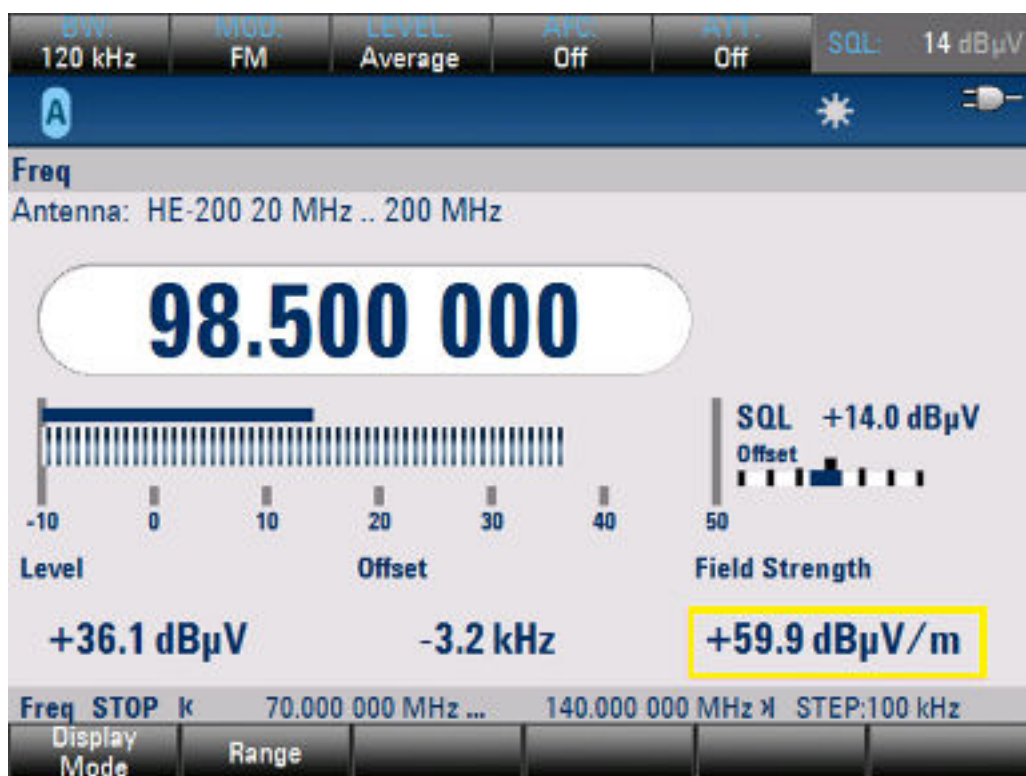


Fig. 3-7: Field strength display (bottom right) in dB μ V/m

The field strength will not be displayed once the center frequency is set beyond the valid frequency range for the selected antenna factor table.

This is also indicated by the K-FAC warning symbol.

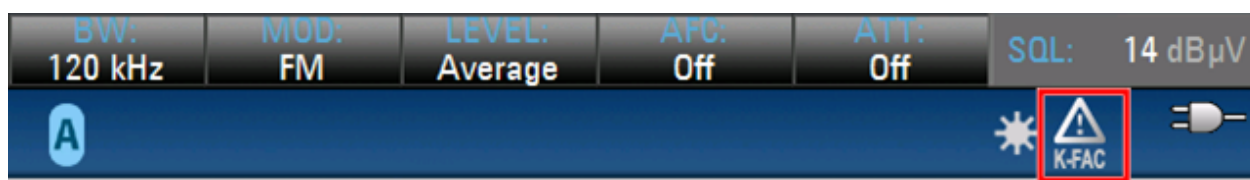


Fig. 3-8: K-FAC symbol (top right) indicates the incompatible frequency range/antenna factor table combination

3.1.7 Level and IF Spectrum Display

The IF spectrum for the center frequency can be displayed alongside level information:

- Press the DISP key (5)
- Press the softkey F1 (Display Mode)

Turning on the R&S PR100 for the First Time

- Select the RX + SPECTRUM display

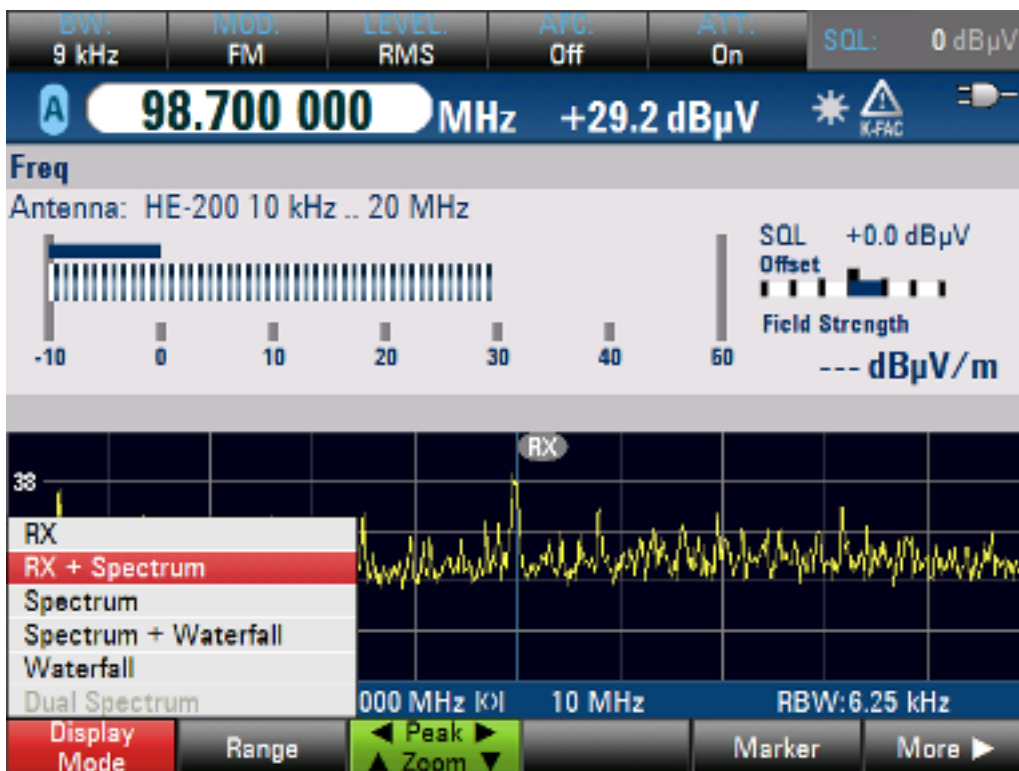


Fig. 3-9: Level information and IF spectrum display

The IF spectrum, with its maximum width of 10 MHz (minimum 1 kHz) is displayed symmetrically to the set center frequency for the R&S PR100. The R&S PR100 is in fixed frequency mode (FFM).

The level axis for the IF spectrum display can be adjusted to current signal strengths:

- Press the softkey F2 (Range)

The upper reference threshold for the IF level axis and the dynamic range in relation to this reference threshold can be entered via the list menu.

Turning on the R&S PR100 for the First Time

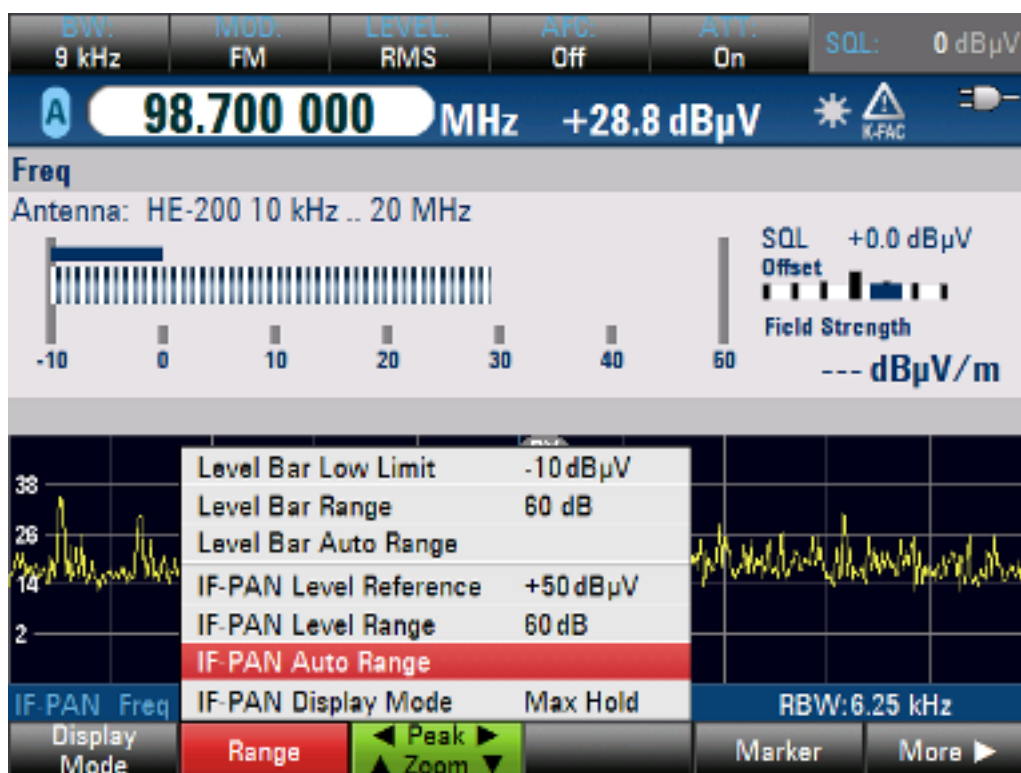


Fig. 3-10: The IF spectrum level axis range settings and the Zoom and Peak function

Should you wish to examine a signal for the set center frequency more closely, use the zoom function:

- Press the softkey F3 (Peak/Zoom)

The user can zoom in or out of the spectrum using the up / down arrow keys (10). The set center frequency remains constant during the zoom process.

The Peak function can be used to switch rapidly between individual carriers:

- Press the softkey F3 (Peak/Zoom)

The user can change the R&S PR100's current center frequency to the next signal using the left / right arrow keys (10).

The squelch setting determines the minimum level of the next signal, in order to be accepted as the next jump mark.

3.1.8 IF Spectrum Display

Exclusive display of the IF spectrum for the center frequency can also be set:

- Press the DISP key (5)

Turning on the R&S PR100 for the First Time

- Select the softkey F1 (DISPLAY MODE)
- Select the SPECTRUM display



Fig. 3-11: IF spectrum display

The IF spectrum, with a maximum width of 10 MHz, is displayed on the whole screen and it can be analyzed using the marker functions, for example:

- Press the DISP key (5)
- Press the softkey F5 (Marker)
- Press the softkey F1 (Marker)
- Press the softkey F2 (Lines)

The displayed markers can be moved within the spectrum either using the rotary knob or by direct input via the keypad (6).

Turning on the R&S PR100 for the First Time

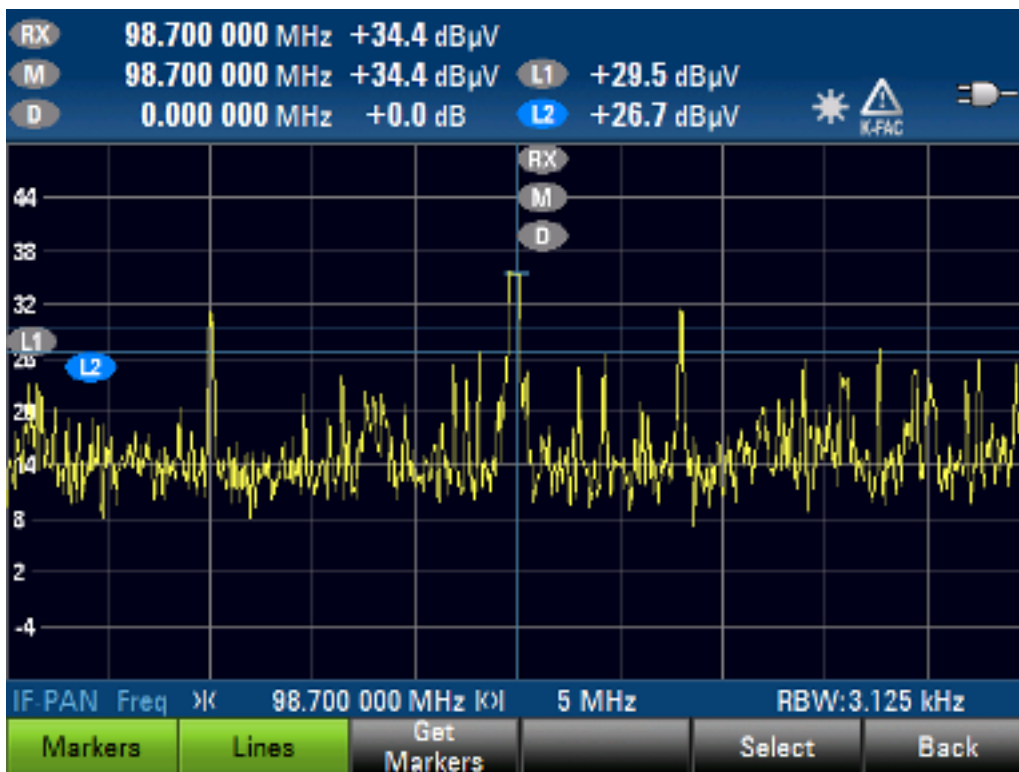


Fig. 3-12: Marker functions within the IF spectrum display

To switch between the individual markers and the RX center frequency display:

- Press the softkey F5 (Select)

The next marker is activated every time the SELECT key is pressed, as indicated by the blue highlighted marker text.

Each active marker can be moved within the spectrum either using the rotary knob (12) or by direct input via the keypad (6).

The center frequency can be adjusted in one of three ways (if the RX display is activated):

1. Rotary knob (12) on the front of the R&S PR100:

The increment size of the rotary knob is determined by the number of horizontal pixels in the display (640 pixels), one step corresponds to one pixel.

With an IF width of 10 MHz, one step of the rotary knob detunes the center frequency by 15,625.00 Hz. With an IF width of 1 kHz, however, one step of the rotary knob detunes the center frequency by 1.5625 Hz, which will be rounded up to 2 Hz.

2. Flywheel knob (18) on top of the R&S PR100

Turning on the R&S PR100 for the First Time

The increment size of the flywheel knob (18) on the top of the R&S PR100 allows the R&S PR100's center frequency to be consistently adjusted in a linear manner, independent of the pixels. The increment size of the rotary knob can be adjusted by:

- Pressing the CONF key (5)
- Pressing the softkey F4 (GENERAL)
- Select the "Flywheel Stepsize" line and press ENTER
- Enter the required stepsize for the flywheel.

The flywheel step size determines the increment size for frequency detuning in Hz for each adjustment step of the flywheel knob (18). (Minimum value: 1 Hz, maximum value: 500 MHz)

3. Direct input via the keyboard

Direct input via the keyboard adjusts the R&S PR100 precisely to the selected center frequency. Direct input is the best option, particularly for large frequency adjustment ranges, as tuning takes too long using rotary/flywheel knobs.

Reviewing the pixel display using NORMAL, MAX HOLD, AVG and MIN HOLD can be adjusted by:

- Pressing the CONF key (5)
- Pressing the softkey F3 (Display)
- Select the "IF-PAN Display Mode" line and press ENTER
- Select the required mode from the list and press ENTER to confirm.

3.1.9 Short Duration Signal Display

The combination of an IF spectrum display and a waterfall diagram is perfect for displaying short-duration signals (e.g. pulsed signals, monopulses, transceivers with frequency hopping, etc):

- Press the DISP key (5)
- Press the softkey F1 (Display Mode)
- Select the SPECTRUM + WATERFALL display

Turning on the R&S PR100 for the First Time

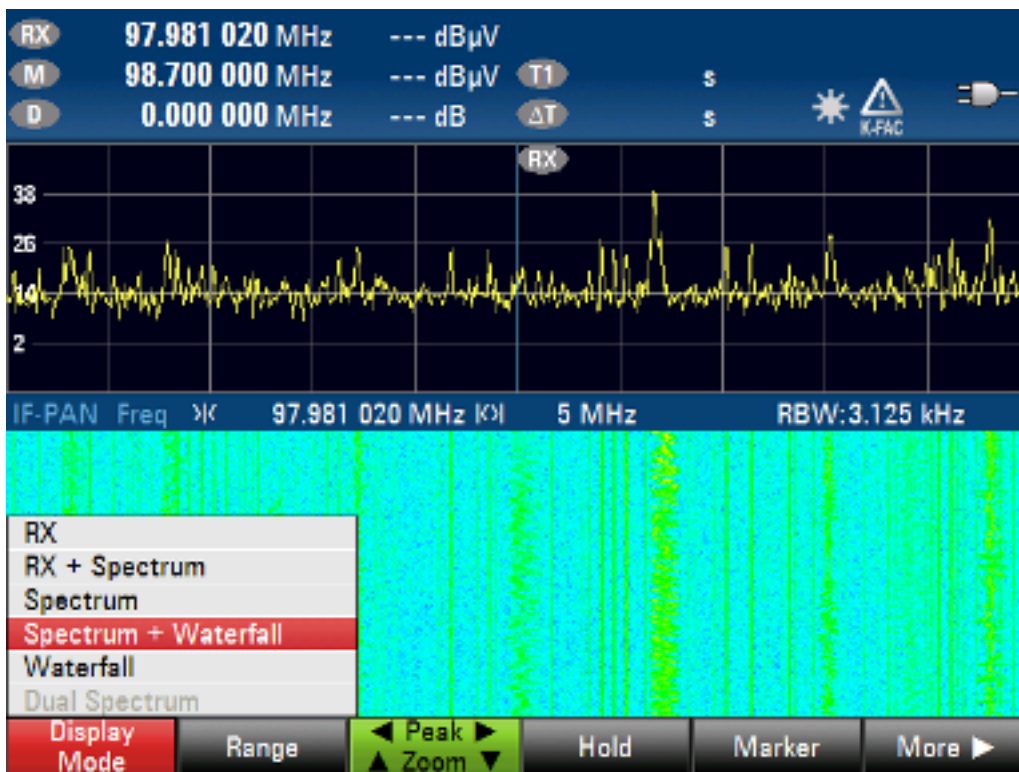


Fig. 3-13: Select the Spectrum and Waterfall display

Both the scale of the level axis for the IF spectrum and the color of the waterfall diagram can be adjusted:

- Press the DISP key (5)
- Press the softkey F2 (Range)

The reference level for the top of the axis and range (with reference to the top of the axis) for the spectrum and waterfall displays can be adjusted via the menu.

Turning on the R&S PR100 for the First Time

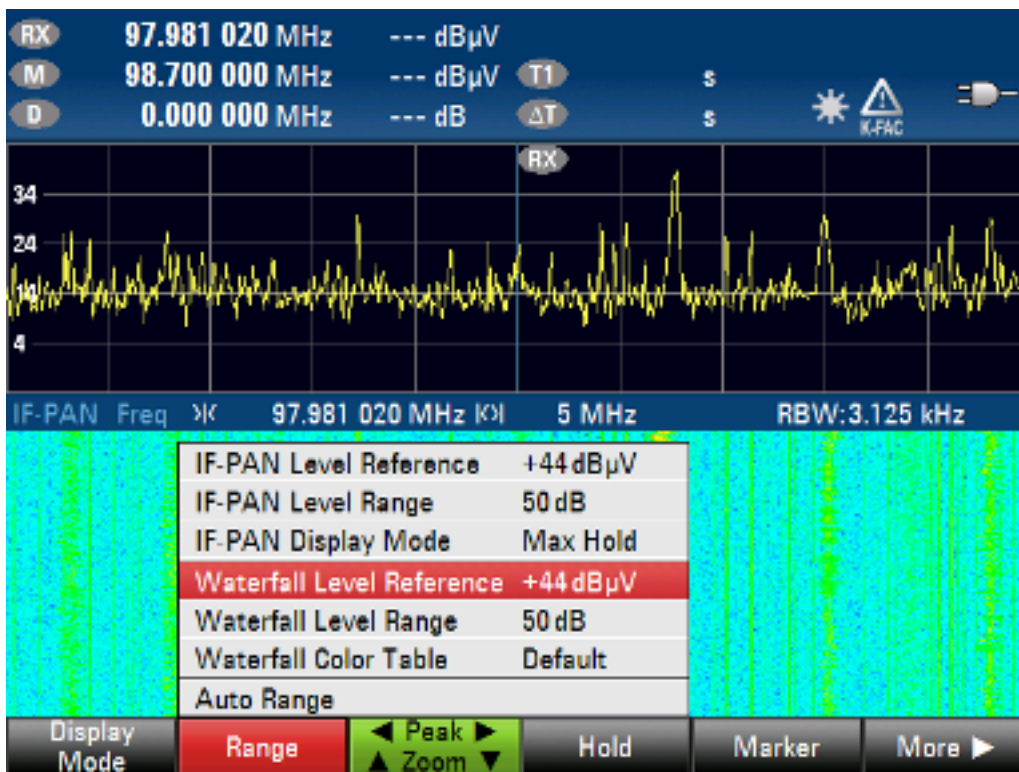


Fig. 3-14: Setting the color range limits for the waterfall diagram

Markers

The sequence of the waterfall diagram can be stopped to perform analysis with the markers:

- Press the DISP key (5)
- Press the softkey F4 (Hold)
- Press the softkey F5 (MARKER)
- Press the softkey F1 (MARKERS) and F2 (LINES)

Use SELECT to switch between the various markers. What is distinctive about both markers (T1 and T2) in the waterfall display is that the time periods in the waterfall diagram are displayed in seconds.

Turning on the R&S PR100 for the First Time

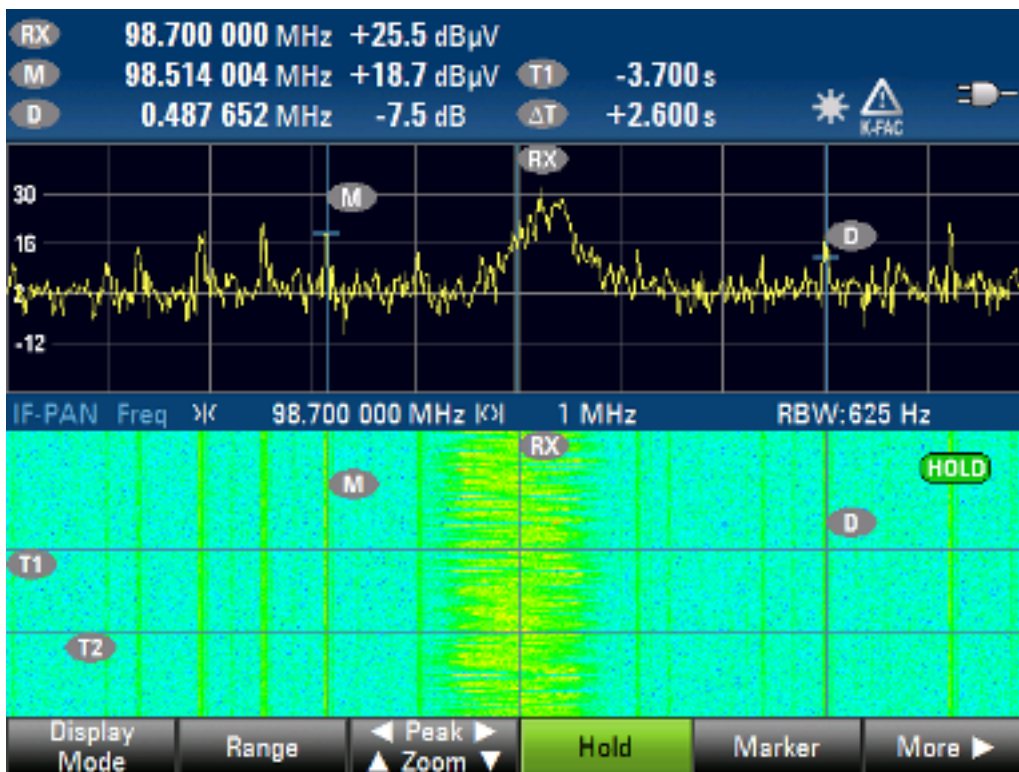


Fig. 3-15: Waterfall diagram stopped for signal analysis

To view a spectrum from the memory

- Press the DISP key (5)
- Press the softkey F5 (Marker)
- Press the softkey F2 (Lines)
- Press the softkey F4 (View T1 Spectrum)

The offline spectrum from the memory is displayed.

The required time is selected using the T1 measurement line.

Fullscreen waterfall display

The waterfall display can be expanded to full-screen view, both during operation and when the HOLD setting is activated:

- Press the DISP key (5)
- Press the softkey F6 (More)
- Press the softkey F2 (Full Screen)

3.1.10 Frequency Scan (FScan)

In principle, the FScan function provides continuous toggling of fixed frequency modes (FFM). FScan is therefore particularly suited to cyclical processing of several channels from the same radio service (e.g. level measurement, monitoring audio quality, channel occupancy, etc).

To set the FScan parameters:

- Press the SCAN key (5)
- Press the softkey F1 (Mode) and select "FSCAN" mode
- Press the softkey F5 (Param)

Use the configuration menu to set the start and stop frequencies, as well as the step size for the FScan.

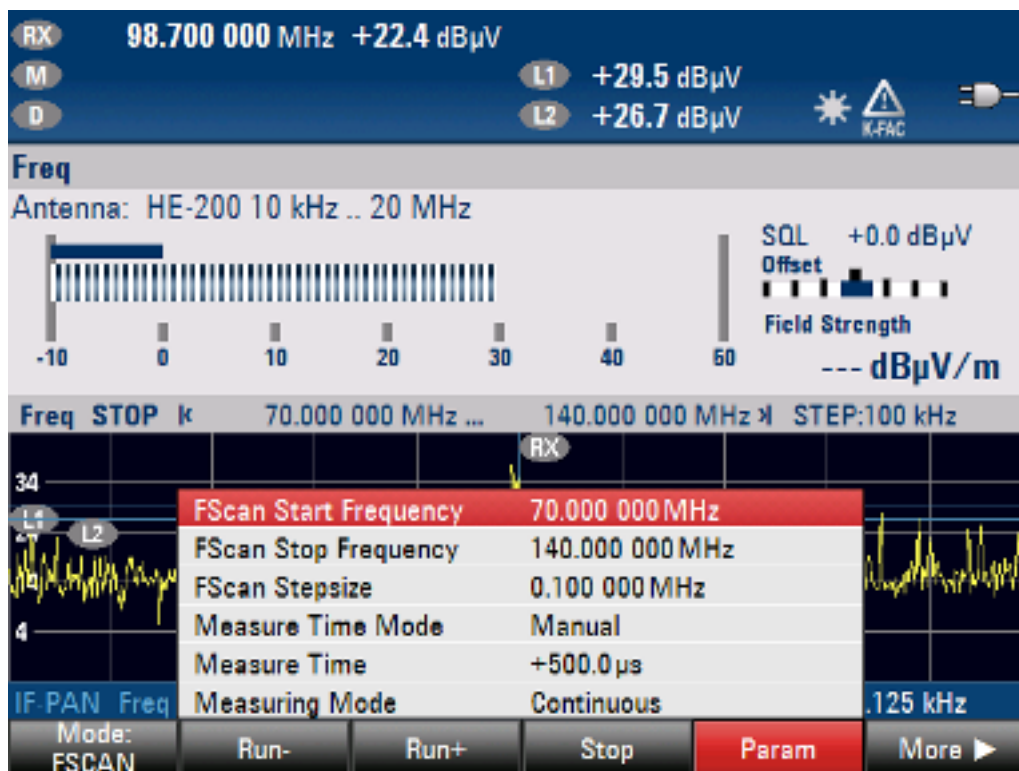


Fig. 3-16: Set the FScan start/stop frequency and step size

Other FScan parameters can be set by:

- Pressing the CONF key (5)
- Pressing the softkey F2 (Scan)

Turning on the R&S PR100 for the First Time

- Select one of the following lines for modification under the "Scan Options" section
 - Dwell Time:
Duration that the R&S PR100 pauses at a channel with a carrier higher than squelch level during the scan.
 - "No Signal Time Mode" / "No Signal Time":
Duration the R&S PR100 pauses at a channel when carrier falls below squelch level during the dwell time. Turn "No Signal Time Mode" to On to allow modification of the "No Signal Time".

The maximum FScan speed is set using the settings:

No Signal Time = 0

Dwell Time = 0

Measure Time Mode = Manual

Measure time = 500 μ s

With these settings the R&S PR100 conducts a single level measurement for each FScan frequency and then immediately jumps to the next frequency.

These settings are used to obtain a brief overview of channel occupancy for a particular radio service. The IF spectrum is only displayed during the scan process when the Dwell Time is set to ≥ 0.5 seconds. The IF spectrum is not updated for shorter Dwell Time settings.

Starting the FScan:

- Press the SCAN key (5)
- Press the softkey F1 (Mode) and select "FSCAN".
- Use the softkey F3 (Run+) or F2 (Run-) to start the FScan process



Fig. 3-17: Start the FScan using RUN+ or RUN-

The demodulation type and bandwidth set here, as well as the squelch value, apply globally to all frequencies of the FScan.

Saving of a channel with DIRECT SAVE function:

In FScan and FFM, channels can be directly saved to the memory list by using the DIRECT SAVE button.

Suppressing of a channel during a FScan:

If single channels or even frequency bands have to be skipped during a FScan, the SUPPRESS function can be used. These channels/bands are stored in the SUPPRESS LIST.

Saving of FScan channels to the SUPPRESS LIST:

- Press button SCAN (5)
- Press the softkey F1 (Mode) and select "FSCAN"
- Start FScan by using F3 (Run+) or F2 (Run-)
- Press softkey F6 (More)
- Take the chosen channel out of the FScan by pushing the softkey F2 (Suppress)



Fig. 3-18: Cancel a channel with SUPPRESS

Editing the SUPPRESS LIST:

- Press button MEM (13)
- Press softkey F5 (Edit Suppress)
- Go to the desired entry by using the rotary or by entering the line number
- Press softkey F5 (View)
- Press softkey F4 (Edit)
- Modify the Start Frequency, Stop Frequency and Description as necessary.
- Press softkey F5 (Save)
- Press softkey F6 (Exit) to return to the suppress list.

3.1.11 Memory Scan (MScan)

In the memory scan mode, predefined channels stored in memory locations are consecutively scanned and analyzed as to whether any signals are present. The R&S PR100 offers 1024 user-definable memory locations. Receive parameters

Turning on the R&S PR100 for the First Time

can be assigned separately to each memory location. The memory scan mode is especially useful for scanning individual frequencies that do not have fixed channel spacing or that use different modulation modes and bandwidths. The memory scan mode thus offers the user a greater degree of freedom than the frequency scan mode.

Saving a channel to the MEMORY LIST:

- Press button MEM (13)
- Press softkey F1 (Save)
- Enter line number
- Enter description
- Press softkey F1 (Save) again
- Press softkey F6 (Exit) to go out of MScan save screen

By using the MEM (13) followed by F4 (Edit Memory) button, it is possible to list all saved channels and edit them.

The parameters in each channel are saved individually.

Memory List						30/03/09 16:00	
Line	Stat	Mem	Frequency MHz	Mod	Description		
000	■	000	90.000 000	FM	Memory_000		
001	■	001	91.300 000	FM	Memory_001		
002	■	002	92.400 000	FM	Memory_002		
003	■	003	92.800 000	FM	Memory_0003		
004	■	004	93.300 000	FM	Memory_0004		
005	■	005	93.700 000	FM	Memory_0005		
006	■	006	94.200 000	FM	Memory_0006		
007	■	007	95.500 000	FM	Memory_0007		
008	■	008	95.800 000	FM	Memory_0008		
009	□	009	96.300 000	FM	Memory_0009		
010	□	010	97.300 000	FM	Memory_0010		
011	□	011	98.500 000	FM	Memory_0011		
012	■	012	102.300 000	FM	Memory_0012		
013	■	013	103.200 000	FM	Memory_0013		
014	■	014	103.700 000	FM	Memory_0014		
015	■	015	103.800 000	FM	Memory_0015		
016	■	016	104.400 000	FM	Memory_0016		
017	■	017	105.200 000	FM	Memory_0017		
018	■	018	106.500 000	FM	Memory_0018		
019	■	019	106.500 000	FM	Memory_0019		
Active Suppress		Delete	Recall	View	Sort	Exit	

Fig. 3-19: Display of saved MScan channels

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Edit Memory Item 2	
RX Frequency	92.400 000 MHz
Demodulation	FM
Bandwidth	150 kHz
Squelch	Off
Squelch Level	SQL: +0 dBμV
Attenuator	Off
Antenna Number	6
Automatic Frequency Control	Off
Description	Memory_002
Memory Status	Active
<div>PrevNextEditSaveExit</div>	

Fig. 3-20: Saved parameters per channel

With the point MEMORY STATUS, it is possible to activate or deactivate a channel for a MScan operation.

The use of the parameters No Signal Time, Dwell Time and Measurement Time is the same as for a FScan operation.

Start of a MScan:

- Press button SCAN (5)
- Press the softkey F1 (Mode) and select "MSCAN"
- Start scan with F3 (Run+) or F2 (Run-)

Saving a channel with DIRECT SAVE function:

During a FScan (see [chapter 3.1.10, "Frequency Scan \(FScan\)"](#), on page 37) and in FFM, channels can be directly saved to the Memory List by using the softkey DIRECT SAVE.

FFM:

- Start FFM by pushing the button SCAN (5)
- Press the softkey F1 (Mode) and select "FFM"

Turning on the R&S PR100 for the First Time

- Press softkey F6 (Direct Save) in order to save the channel



Fig. 3-21: Saving of a channel with DIRECT SAVE

The DIRECT SAVE location within the memory list can be configured via "CONFIG MENU"

- Press button CONF (5)
- Press softkey F5 (Memory)
- Choose "Direct Save start location" and input desired line number between 0 and 999
- Choose "Direct Save stop location" and input desired line number between 0 and 999
- Choose "Auto Save start/stop location" and input desired line number between 0 and 999

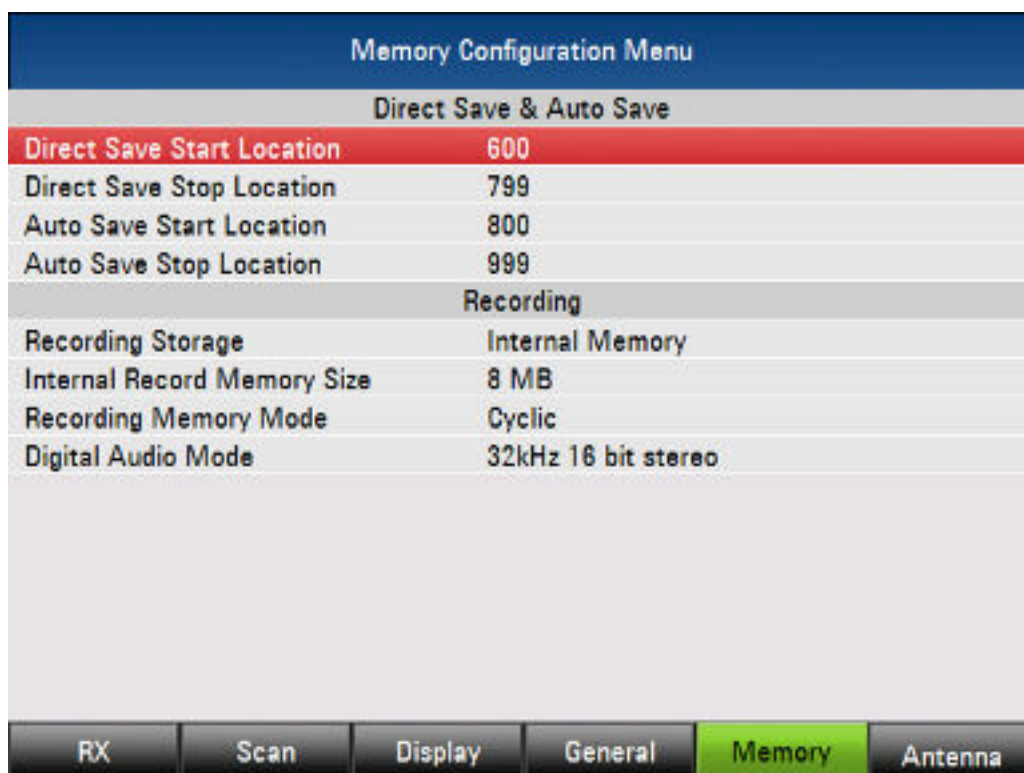


Fig. 3-22: Memory configuration menu

3.1.12 Broadband Panorama Scan (PScan)



In order to carry out a Panorama Scan operation, the option R&S PR100-PS (Order number: 4071.9306.02) has to be installed.

To display a broad frequency bandwidth which is independent of fixed channel spacing or of memory programming (e.g. from 870 MHz to 1.9 GHz), the R&S PR100 can be operated in Panorama Scan mode:

- Press the SCAN key (5)
- Press the softkey F1 (Mode) and select "PSCAN"
- Press the softkey F5 (Param)

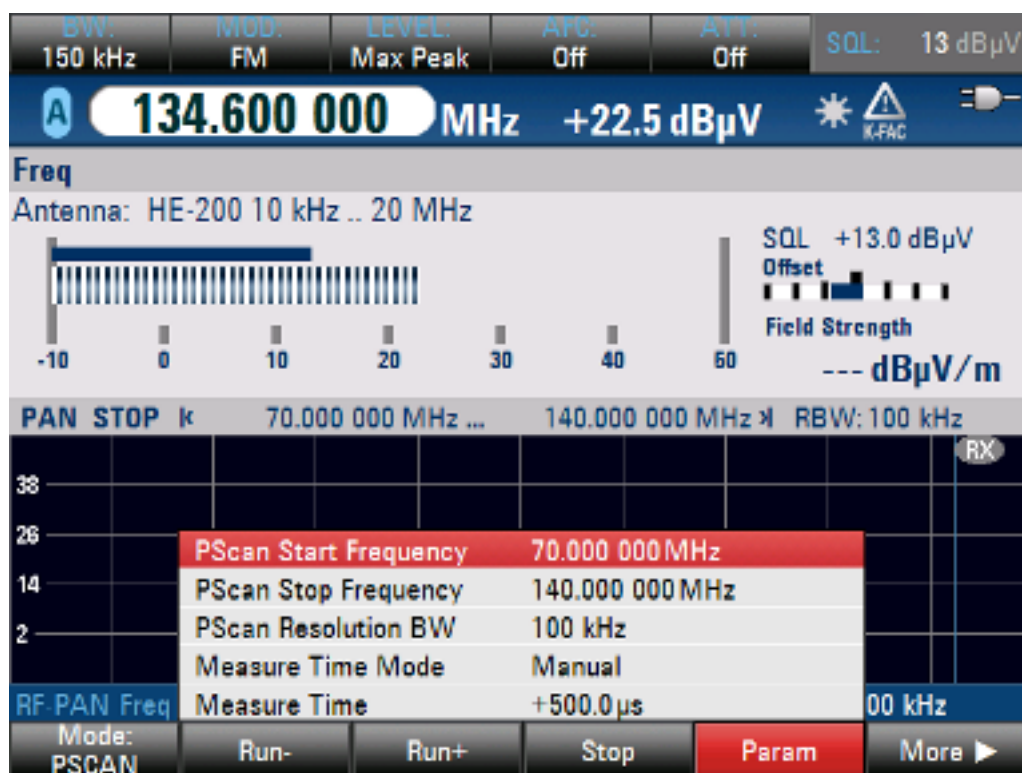


Fig. 3-23: Set the start/stop frequency and the resolution bandwidth of the PScan

The R&S PR100 then scans the frequency bandwidth in the specified step sizes and carries out an FFT calculation for each block (the frequency block size depends on the resolution bandwidth selected) to display the spectral data.

- Press the SCAN key (5)
- Press the softkey F1 (Mode) and select "PSCAN"

Turning on the R&S PR100 for the First Time

- Use the softkey F3 (Run+) or F2 (Run-) to start the PScan process
- The PScan process can be stopped by softkey F4 (Stop)

The R&S PR100 scans the set spectrum range using the selected parameters and displays the result on the screen (demodulation and level measurement are not possible during a PScan).

The Rx marker can be changed during a scan operation either by using the keypad or the rotaries. If the chosen frequency is within the display frequency range, the measured channel power in accordance to the chosen detector is measured every time the PScan passes the marker position.

During a PScan the most important parameters of the scan can be changed by using the PARAM softkey. After the change of the parameters the PScan has to be restarted again.

The level axis can be adjusted during the scan process:

- Press the DISP key (5)
- Press the softkey F2 (Range)

The upper reference threshold for the level axis and the dynamic range in relation to this reference threshold can be entered via the list menu.

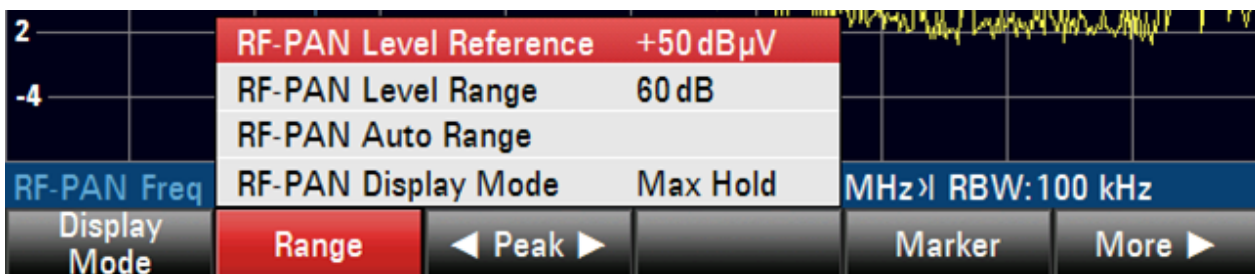


Fig. 3-24: Setting the level axis value range during the PScan

To obtain a rapid spectrum overview over a broad frequency range, we recommend using a PScan RBW of 100 kHz and a measuring time of 500 μs. These settings will generate the maximum scan speed.

For a detailed signal analysis of a (normally smaller) frequency range, a smaller PScan RBW is used (up to 125 Hz). This setting generates the highest signal resolution and the highest sensitivity with the lowest scan speed.

Evaluation of the pixel display using NORMAL, MAX HOLD, AVG and MIN HOLD can be adjusted by:

- Pressing the CONF key (5)

Turning on the R&S PR100 for the First Time

- Pressing the softkey F3 (Display)
- Select the "RF PAN Display Mode" line and press ENTER
- Select the required mode and press ENTER to confirm the setting.

PScan with waterfall display

During a PScan, it is possible to activate the waterfall display. In this mode PScan and waterfall display are shown together.

To add a waterfall display to a PScan

- Press the DISP key (5)
- Press the softkey F1 (Display Mode)
- Select display "SPECTRUM + WATERFALL"

PScan in DUAL SCREEN Mode

During a PScan, it is possible to switch to DUAL SCREEN mode. In this mode PScan and IF panorama are shown.

- Press the DISP key (5)
- Press softkey F1(Display Mode)
- Press button SCAN and choose "PSCAN" from the list
- Choose DUAL SPECTRUM mode

In the DUAL SCREEN mode the IF panorama is shown in the upper part and the panorama scan is shown in the lower part of the screen. While the PScan is running, the Rx marker can be moved to a signal by using the keypad, rotary or the PEAK functionality.

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Fig. 3-25: DUAL SCREEN mode while PScan is running

If the PScan is stopped, the IF panorama that corresponds to the chosen Rx marker frequency is shown in the upper part of the screen.

Turning on the R&S PR100 for the First Time

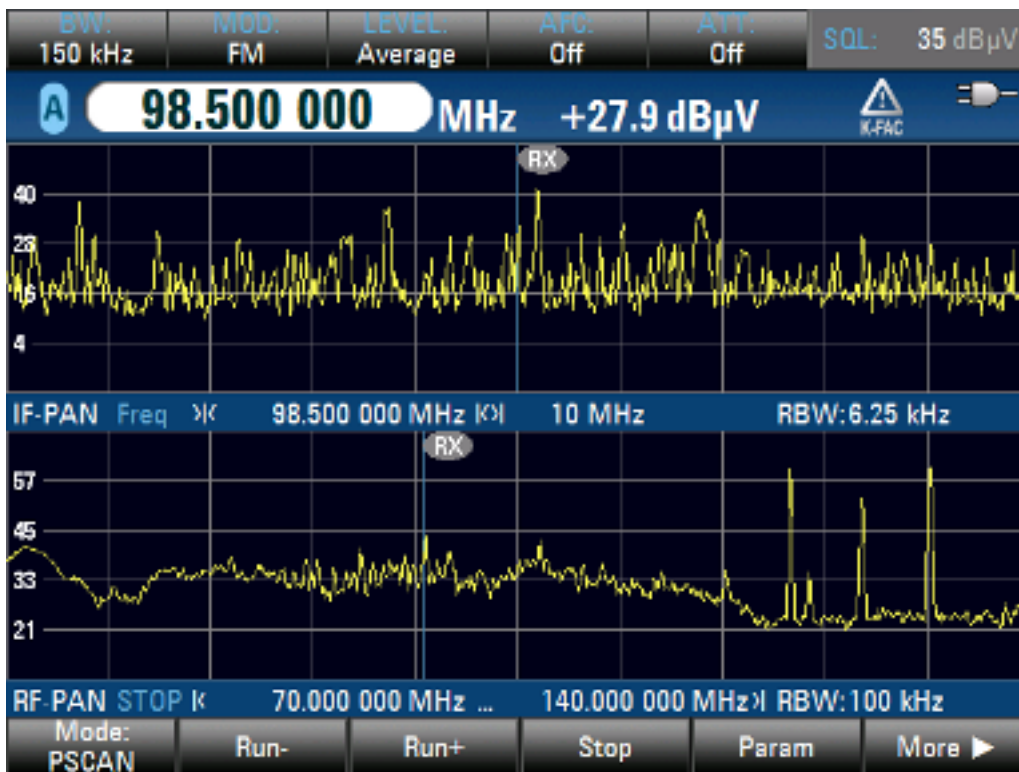


Fig. 3-26: DUAL SCREEN mode with stopped PScan.

The user can now analyze the spotted signal with the complete functionality of IF panorama analysis.

PScan in DIFFERENTIAL Mode

During a running PScan it is possible to switch to DIFFERENTIAL MODE. In this mode the actual spectrum situation is used as a reference input signal and only changes from this reference (positive or negative) are shown in the display. The DIFFERENTIAL mode is very well suited for the search of weak or seldom signals.

- Start PScan
- Press Scan key (5)
- Press softkey F6 (More)
- Select F4 (Diff Mode) to use the displayed spectrum as the reference spectrum

3.1.13 Internal Recording



In order to carry out recording and replay, the option R&S PR100-IR (Order number: 4071.9358.02) has to be installed.



Recording in DF mode is not supported

Internal recording can record and replay spectra and audio data. IQ data can only be recorded.

Recording is possible to RAM (volatile) and to SD card (permanent).

To **record Audio Data** (e.g. in RAM)

- Press REC key (13)
- Press softkey F1 (Rec Mode)
- Choose "Audio" by front rotary or up/down arrow keys and press ENTER key
- Press softkey F3 (Param)
- Choose "Recording Storage " and press ENTER key
- Choose "Internal Memory" and press ENTER key
- Start Audio Recording with softkey F2 (Start)
- Stop Audio Recording with softkey F2 (Stop) after desired time

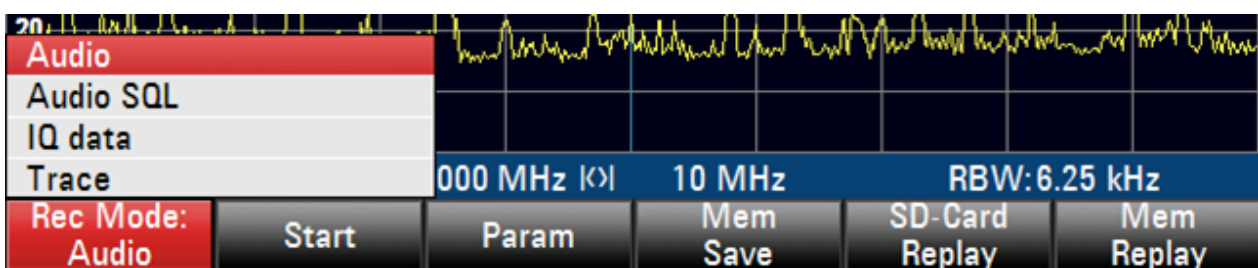


Fig. 3-27: Selection of audio recording

To **replay Audio Data** (e.g. from RAM)

- Press REC key (13)
- Press softkey F6 (Mem Replay)
- Start replay with softkey F1 (Play)

Turning on the R&S PR100 for the First Time

- Stop replay with softkey F2 (Stop), if desired
- Press REC key to return to the recording menu

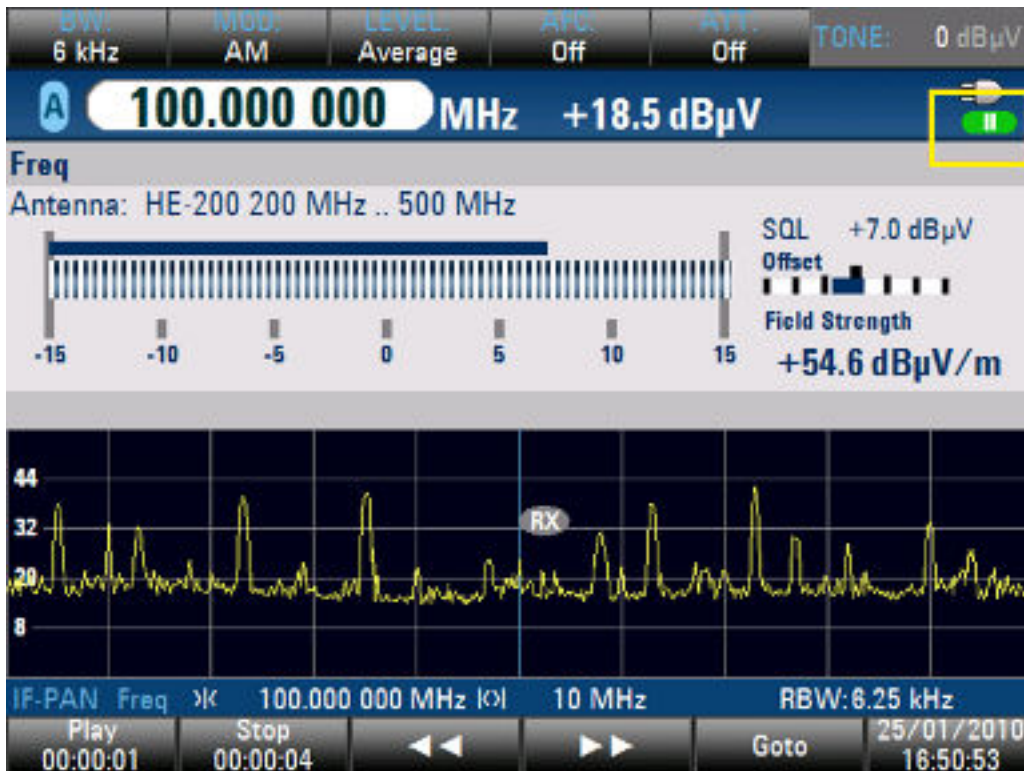


Fig. 3-28: Audio replay symbol for stop/pause/replay is shown at top right in green

To **record spectra** (e.g. on SD card)

- Press REC key (13)
- Press softkey F1 (Rec Mode)
- Choose "Trace" by front rotary or up/down arrow keys
- Press ENTER key
- Press softkey F3 (Param)
- Choose "Recording Storage"
- Press ENTER key
- Choose "SD card"
- Press ENTER key
- Start recording of spectra with softkey F2 (Start)
- Stop recording of spectra with softkey F2 (Stop) after desired time

Turning on the R&S PR100 for the First Time

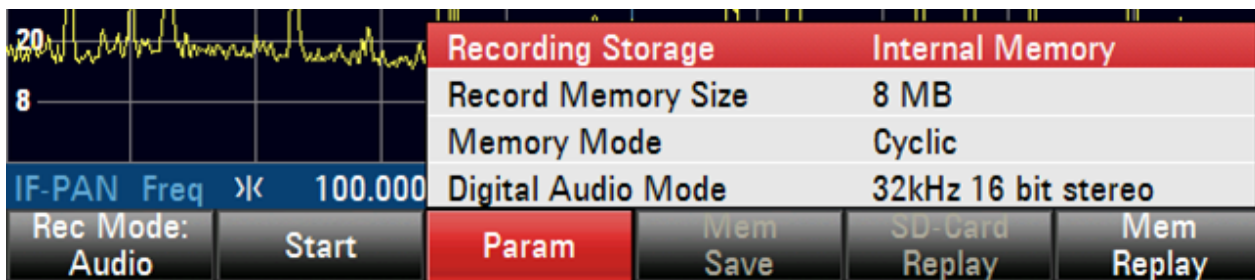


Fig. 3-29: Internal recording, switch storage between RAM and SD card

To **replay spectra** (here from SD card)

- Press REC key (13)
- Press softkey F5 (SD Card Replay)
- Choose Trace-File (*.rtr) by front rotary or up/down arrow keys
- Start spectrum replay with F2 (Replay)
- Markers can be activated by pressing softkey F5 (Marker)
- The spectrum under the T1 marker can be shown with softkey F4 (View T1 Spectrum), if line markers are activated

3.1.14 External Triggered Measurement



In order to trigger measurements, the option R&S PR100-ETM (Order number: 4071.9458.02) has to be installed

Triggering is explained here by an example:

MSCAN starts after a button press and stops again after a defined time.

- Select MSCAN Mode, see [chapter 3.1.11, "Memory Scan \(MScan\)"](#), on page 39
- Configure trigger :
 - Press CONF key (5)
 - Press softkey F1 (RX) and enter the following settings:
 Trigger Action -> Scan Run+
 Trigger Start Source -> Rotary Button
 Trigger Stop Source -> Trigger ON Duration T3
 Trigger ON Duration T3 -> e.g. 10 s
- Activate trigger with Trigger Function -> Enabled

Turning on the R&S PR100 for the First Time



Fig. 3-30: Trigger configuration

- Press SCAN key to display spectrum
- Start measurement by pressing the center button of the front rotary
- Measurement stops after duration T3

Turning on the R&S PR100 for the First Time

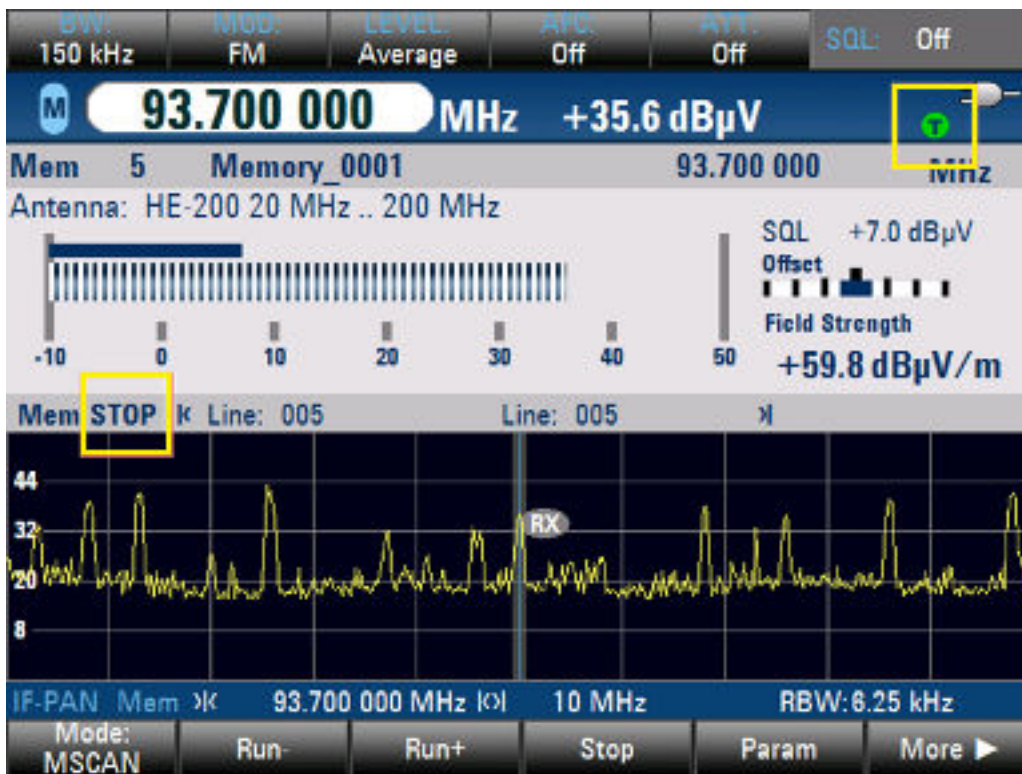


Fig. 3-31: MSCAN waiting for trigger signal. Trigger icon is Green.

- Deactivate trigger again by Trigger Function -> Disabled

3.1.15 RX Setting Options

The RX key (5) provides access to various setting options.

Rapid switching between two communication channels (e.g. 98.5 MHz and 89.0 MHz):

- Adjust the R&S PR100 to 98.5 MHz
- Press the RX key
- Press the softkey F2 (A=>B)
- Adjust the R&S PR100 to 89.0 MHz
- Press the softkey F1 (VFO-A/VFO-B)

The user can now use the VFO-A/VFO-B softkey to rapidly jump between the two channels (98.5 MHz and 89.0 MHz), in order to conduct correlative analyses, for example.

Turning on the R&S PR100 for the First Time

Manual gain control during AM modulation

- Press the RX key (5)
- Press the softkey F3 (MGC)



Fig. 3-32: Active MGC to optimize audio demodulation

With MGC activated, the center rotary knob on the top of the R&S PR100 controls the audible volume of an AM-demodulated signal. It can be used, for example, with fading effects and resulting variations in volume. The MGC only has volume effect with AM demodulation.

Noise limiter (squelch) for time-dependent available communication channels

- Press the RX key (5)
- Press the softkey F4 (SQL)

The noise limiter mutes the audio path as soon as the signal receiving level falls below the set SQL threshold. The noise limitation value can be adjusted using the center knob on the top of the R&S PR100. The noise limiter prevents audible and disruptive white noise on the audio path, for example during speech pauses in radio communication.

Acoustic signaling for a changing signal level

- Press the RX key (5)
- Press the softkey F5 (Tone)

The TONE function transforms the received signal level in dB μ V into a single tone sound which is emitted via the loudspeaker. The pitch of this tone depends on the signal level. The higher the level, the higher the pitch of the sound.

The pitch of the basic tone (e.g. for a reference level) may be adjusted to the ear of the particular user by the center rotary knob on the top of the receiver.



Fig. 3-33: Tone function for acoustic output of level information

3.1.16 Saving Screenshots

The current screen content can be saved to the SD card by means of a screenshot in .png format:

- Press the FILE key (13)
- Press the softkey F1 (Save Screen)
- Give the screenshot a name using the alphanumeric keypad
- Press the softkey F1 (Save)

The current screenshot is saved with the chosen name on the SD card in the R&S PR100.



To reduce the consumption of toner or ink during printing, the screenshot is converted to a white background with a black colored trace.



Fig. 3-34: Store a screenshot and name the file

3.1.17 Saving Traces

A current screen content can be saved to the SD card by means of a trace in .csv format:

- Press the FILE key (13)
- Press the softkey F2 (Save Trace)
- Give the current trace a name using the alphanumeric keypad
- Press the softkey F1 (Save)

The current trace is saved with the chosen name on the SD card in the R&S PR100.

Only traces that are obtained from IF panorama or panorama scan can be saved.

3.1.18 Saving User Settings

The current user settings can be stored in the R&S PR100 and called up again if necessary:

Presets in Internal Memory

- Press the FILE key (13)
- Press the softkey F3 (User Presets)

Select the required memory location using the rotary knob.

- Press the softkey F1 (Save Preset)

For easy identification, additional descriptive text should be entered using the alphanumeric keypad . Entry is saved by:

- Pressing the ENTER key
- Pressing the F1 (Save Preset) softkey again

Turning on the R&S PR100 for the First Time

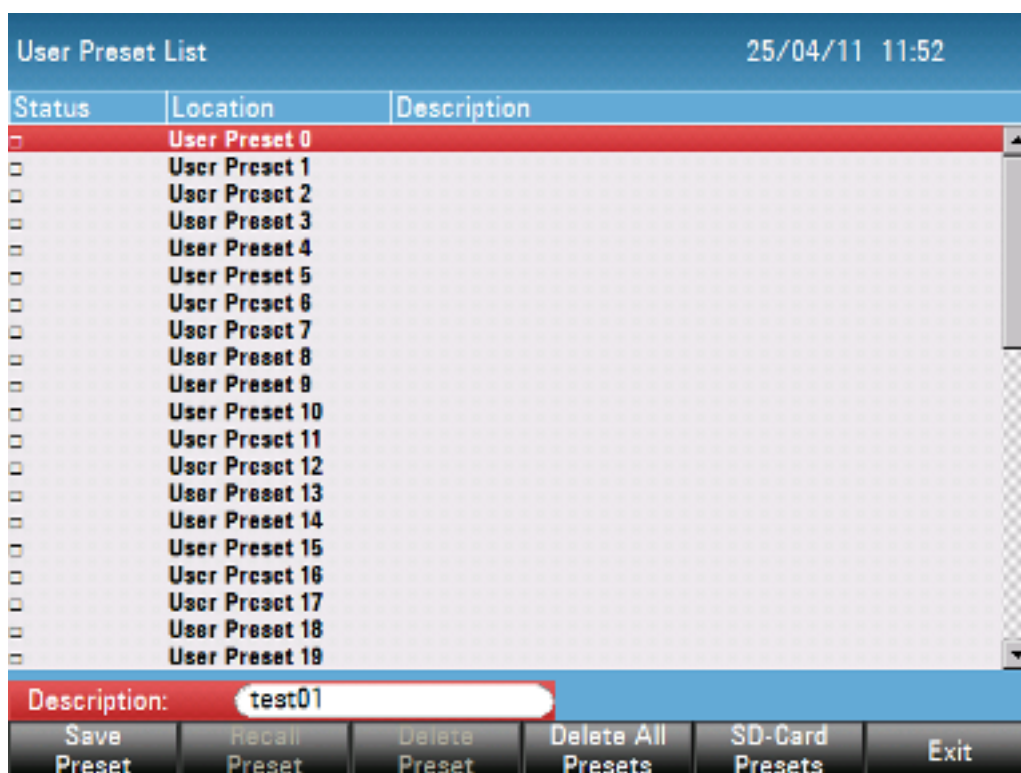


Fig. 3-35: Saving user settings and naming the file

The user setting is now saved in the chosen memory location.

The required default setting can be recalled:

- Press the FILE key (13)
- Press the softkey F3 (User Presets)

Select the chosen memory location using the rotary knob.

- Press the F2 (Recall Preset) softkey

The settings stored in the particular memory location are transferred into the R&S PR100.



The R&S PR100 DOES NOT issue a warning before deleting an individual memory location.

The R&S PR100 issues a warning before deleting all user settings.



Fig. 3-36: Warning before deleting all memory locations

Turning on the R&S PR100 for the First Time

Presets in SD Card

- Press the FILE key (13)
- Select the softkey F3 (User Presets)
- Select softkey F5 (SD-Card Presets)
- Select softkey F3 (Store Presets)

For easy identification, additional descriptive text should be entered using the alphanumeric keypad . Entry is concluded by:

- Pressing the ENTER key

User Presets on SD-Card				07/12/11	01:45
Stat	Name	Size	Date	Time	
◀	\Storage Card\PR100\..				
	UserPresets_003.upf	3 kB	07/12/2011	01:44	
	UserPresets_002.upf	3 kB	31/10/2009	13:40	
	UserPresets_001.upf	3 kB	31/10/2009	13:40	
	UserPresets_000.upf	3 kB	31/10/2009	13:40	
Free: 3857 MB					
Rename	Sort	Store Presets	Restore Presets	Exit	

Fig. 3-37: The user setting is saved in the chosen storage card location as an upf file.

The user setting is now saved in the chosen memory location.

The required default setting can be recalled:

- Press the FILE key (13)
- Press the softkey F3 (User Presets)
- Press the softkey F5 (SD-Card Presets)
- Select the chosen user preset file using the rotary knob
- Press the softkey F4 (Restore Presets)

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- Press softkey F1 (Yes) to overwrite the current presets or softkey F6 (No) to abort operation

The settings stored in the particular user preset file are transferred into the R&S PR100.

3.1.19 GPS Compass in FFM mode



Requires that the option R&S PR100-GPS (Order number: 4071.9958.02) is installed.

The GPS Compass option allows the use of HE300 and 3rd party GPS/compass NMEA devices to be attached to the AUX1 and AUX2 connectors. It will also enable the use of the map and compass display in the FFM mode.

In this section, GPS Compass is explained by means of the compass view in the FFM mode with the connection of a HE300 antenna.

Compass Display

To enable the display of the compass, perform the following:

- Pressing the CONF key (5)
- Pressing the softkey F3 (Display)
- Scroll to the setting "Display GPS/Compass" and press ENTER
- Select "ON" from the list and press ENTER to confirm

Setup the Auxiliary 1 connection and GPS/Compass sources for use with HE300

- Press the CONF key (5)
- Press the softkey F4 (General)
- For the setting "Auxiliary1->Accessory" select "Antenna"
- For the setting "GPS/Compass->GPS Data Source" select "Aux1"
- For the setting "GPS/Compass->Compass Data Source" select "Aux1"

Switch to FFM mode and select the RX display. The compass rose will be shown on the right side of the RX display.

Turning on the R&S PR100 for the First Time

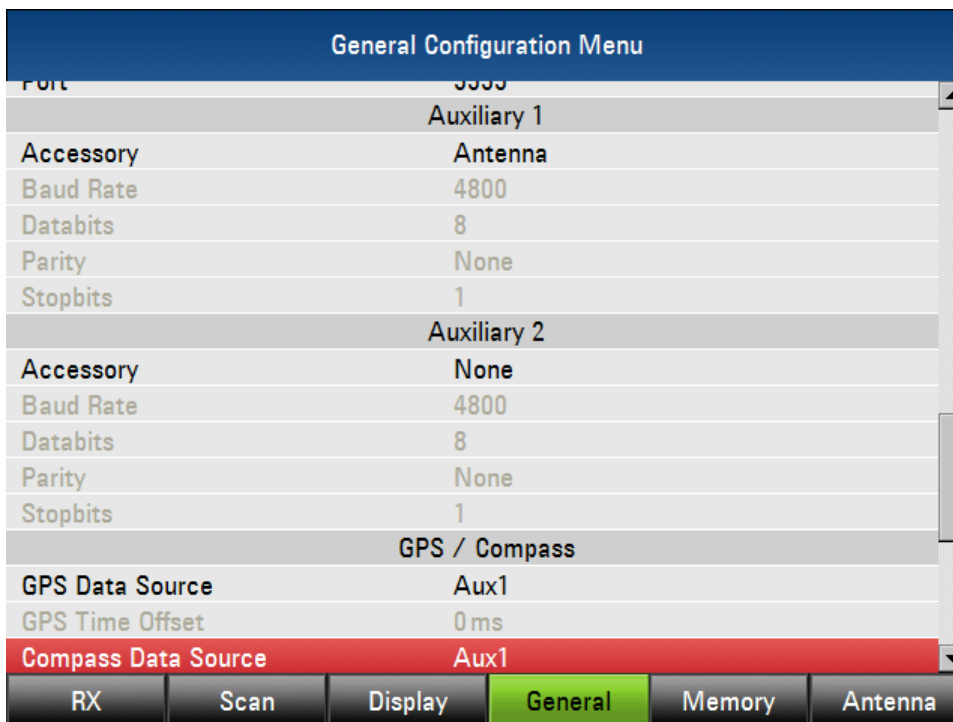


Fig. 3-38: Configuration for HE300 Antenna

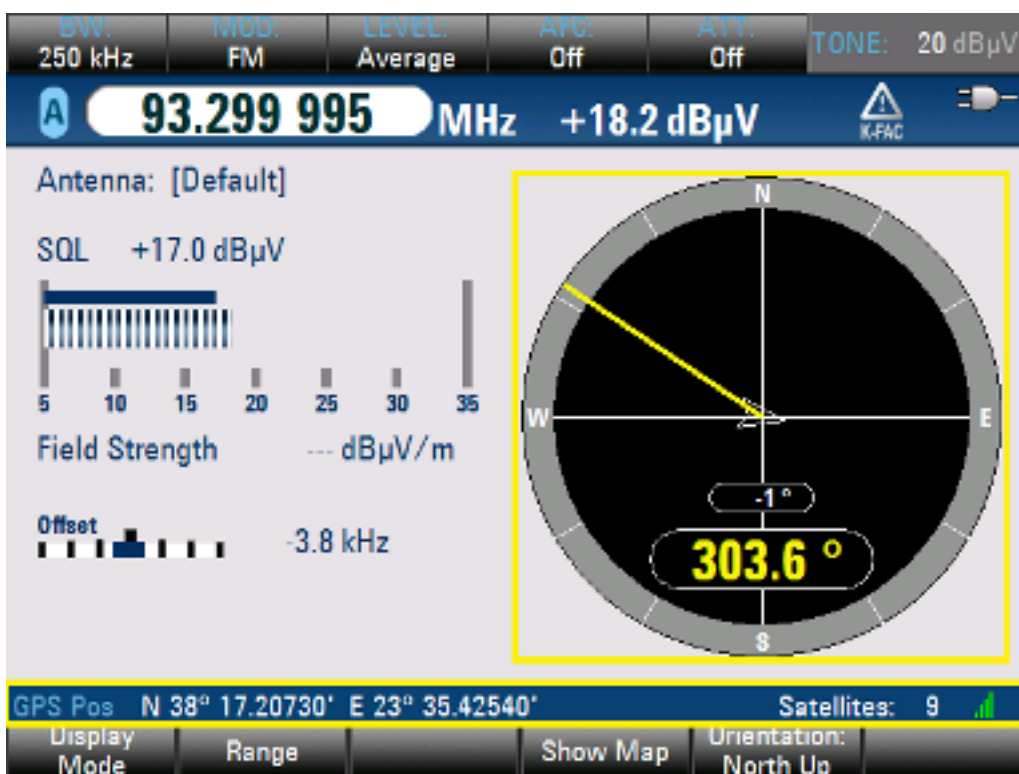


Fig. 3-39: RX display with compass displayed

Turning on the R&S PR100 for the First Time

The yellow line and number indicates the direction that the HE300 antenna is facing, which is 303.6 degrees. The elevation of the HE300 antenna is -1 degrees below horizontal level.

The GPS direction is displayed as the white arrow in the middle of the compass display. The GPS location details is shown in the status bar.

The compass display differs in the spectrum and waterfall display. The compass display location can be changed by pressing softkey F6 (More) followed by softkey F4 (Compass):

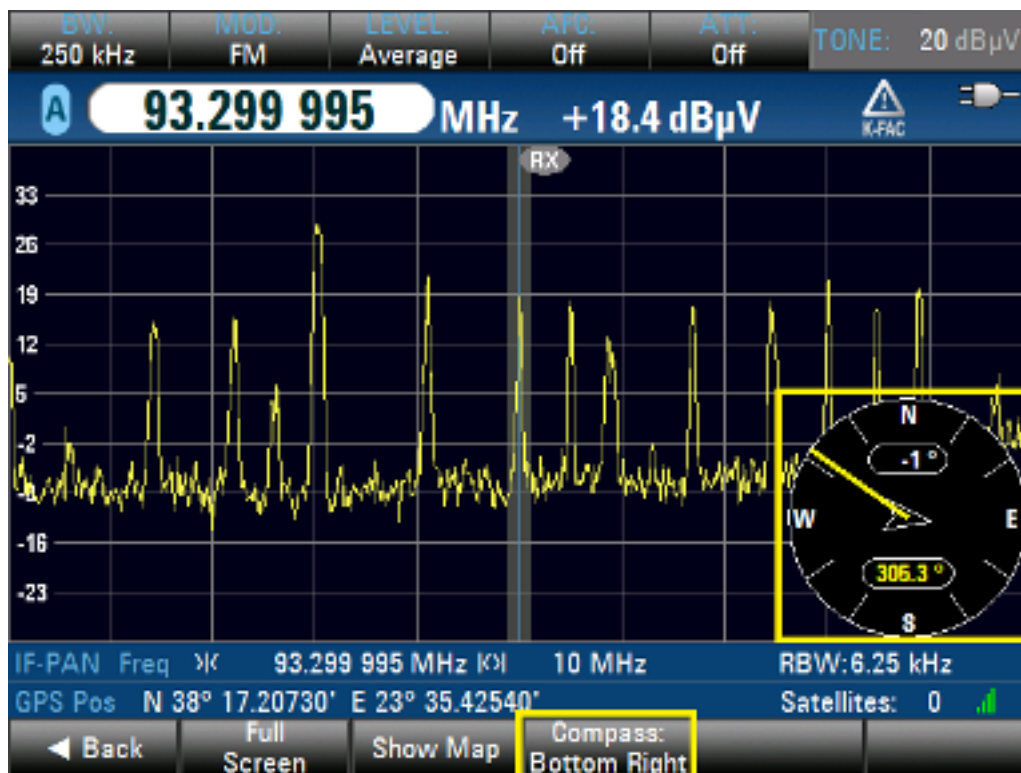


Fig. 3-40: Compass display in Spectrum display mode

3.1.20 Direction Finding



Requires that the option R&S PR100-DF (Order number: 4096.2805.02) is installed.

Requires that a supported R&S DF antenna is attached.

Direction finding is explained here by an example of using a signal.

DF Setup

Connect the R&S ADD107 antenna as follows:

- R&S ADD107 RF output to R&S PR100's RF input
- R&S ADD107 aux output to R&S PR100's AUX1 input

Configure R&S PR100 to use the antenna on AUX1.

- Press the CONF key (5)
- Press the softkey F4 (General)
- Set "Auxiliary 1 -> Accessory" to "Antenna"
- If GPS Compass option is installed, configure the "GPS Data Source" and "Compass Data Source" as shown in [figure 3-38](#)

DF Mode

To switch to Direction Finder fixed frequency mode:

- Press the SCAN key (5)
- Press the softkey F1
- Select "DF" from the popup menu item and press ENTER to confirm.

Alternatively for quick switching between FFM and DF mode, you can set "User Key 1" or "User Key 2" to "Direction Finding On/Off":

- Press the CONF key (5)
- Press the softkey F4 (General)
- Configure setting "User Key 1" or "User Key 2" to "Direction Finding On/Off"

In DF mode, the displays will show the direction of the signal in the compass circle and the GPS position information in the GPS information status bar. The next two diagrams highlight the areas on screen where information is displayed.



If the azimuth is invalid, the azimuth line and value will be grey.

If the antenna is disconnected during DF mode, the DF Spectrum will be empty and no line will be displayed in the compass circle.



Azimuth line will be gray, if signal is below DF Squelch Level or Quality is below DF Quality Squelch.

Turning on the R&S PR100 for the First Time

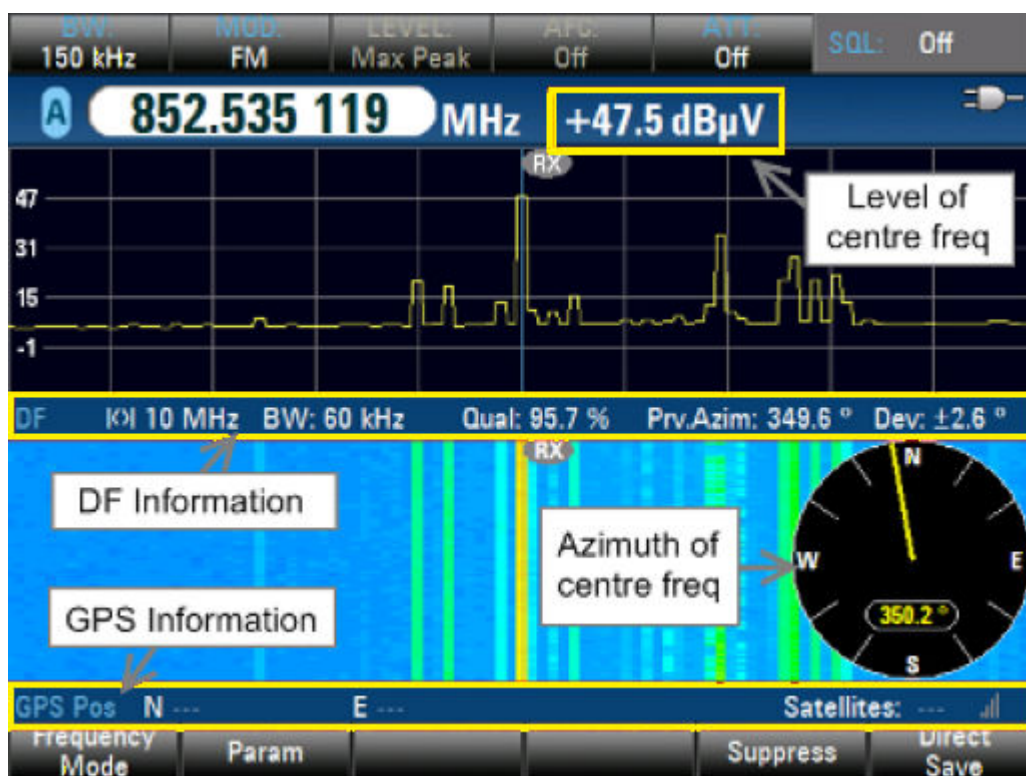


Fig. 3-41: DF mode in “Spectrum + Waterfall” display

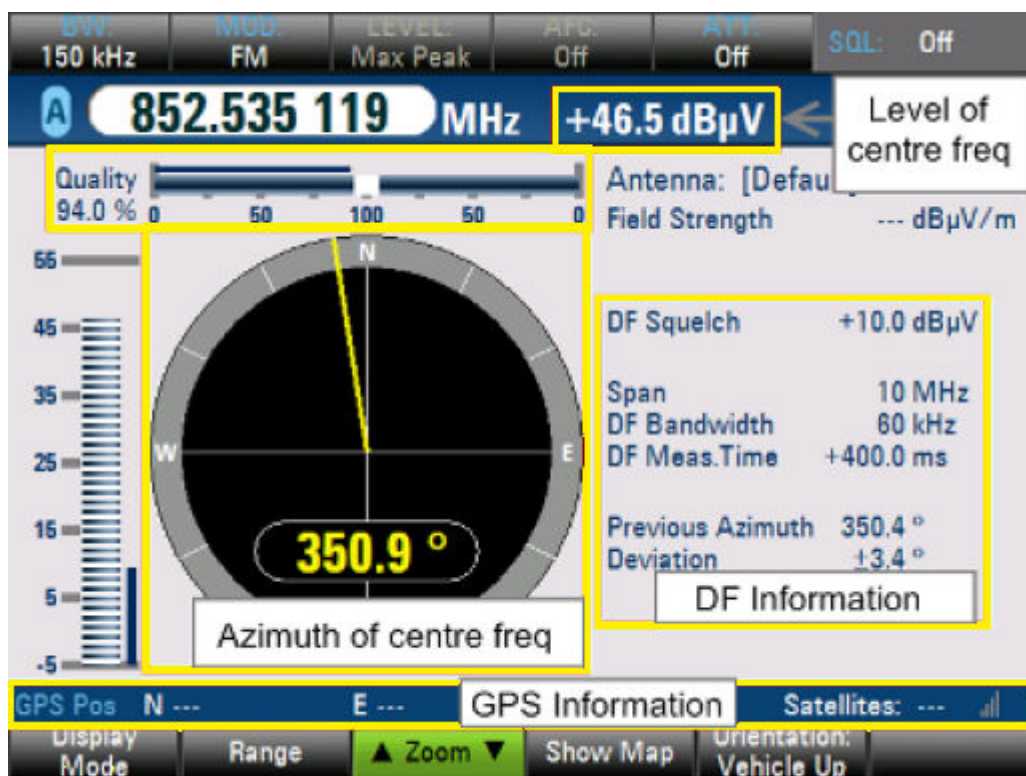


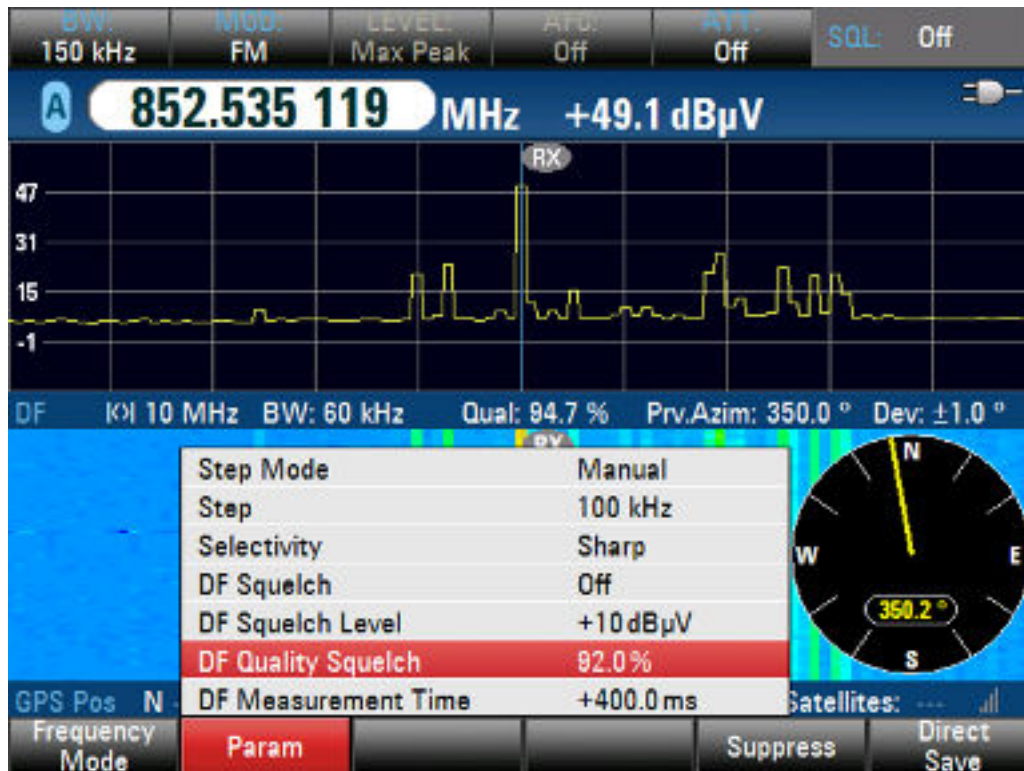
Fig. 3-42: DF mode RX display

Turning on the R&S PR100 for the First Time

DF Settings and Results

The settings for DF are available from the SCAN menu

- Press the SCAN key (5)
- Press the softkey F2 (Param)



The settings for the DF are also available from the RX Configuration Menu and Display Configuration Menu.

Description of DF Settings:

- Step Mode – Auto/Manual. Note that FFM mode only has Auto Mode
- Step – Changes the step width in Manual Step Mode
- Selectivity – Default/Normal/Narrow/Sharp. The actual selectivity used depends on the combination of step width and span.
- DF Squelch – Off/Gate/Normal
 OFF : Used if signals are specially modulated or very weak. DF is performed continuously and DF squelch is ineffective.
 NORMAL : Used to monitor radio networks. DF process is started and stopped by the squelch level.

Turning on the R&S PR100 for the First Time

GATE : Used where signals are temporary transmissions and uptime is too short for NORMAL mode. DF process is started and stopped by the squelch level.

- DF Squelch Level – Used only if “DF squelch” is Gate/Normal
- DF Quality Squelch – Filter on the DF quality. Quality values below this value will be considered invalid.
- DF Measurement Time – DF averaging time. This setting is independent of the FFM Measurement Time.

Description of DF Results:

- Quality – An indication of how good the azimuth is
- Azimuth – The direction of the center frequency
- Previous Azimuth – The previous direction of the center frequency
- Deviation – The standard deviation of the last 10 readings
- DF Bandwidth – This is not related to the demodulation bandwidth. Its value depends on the step and selectivity used.

In order to get valid DF results, use a combination of the DF settings that suits the signal that is being monitored.

3.1.21 Map View



Requires that the option R&S PR100-GPS (Order number: 4071.9958.02) is installed.

When in RX display mode:

- Press the DISP key
- Select softkey F4 (Show Map)

When in display modes other than RX:

- Press the DISP key (5)
- Press softkey F6 (more)
- Press softkey F3 (show map)

Turning on the R&S PR100 for the First Time

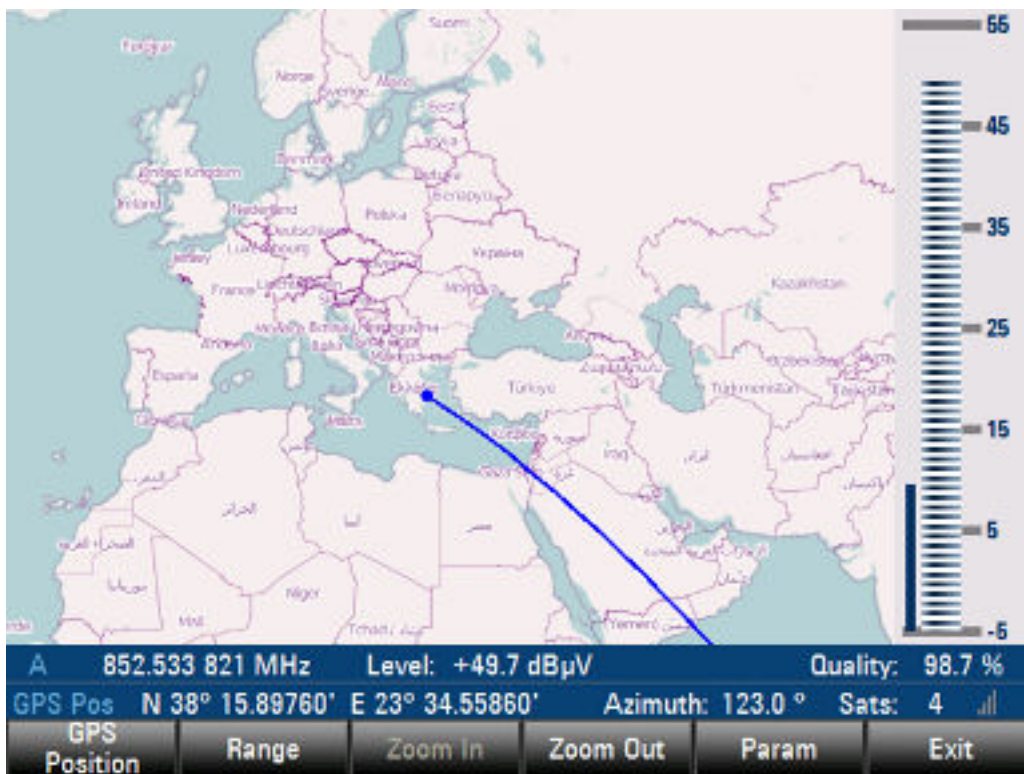


Fig. 3-43: Map view

The R&S PR100 includes only the world map overview. Please refer to the operating manual for instructions on how to download and load maps from the SD card using the OSMWizard for your area of interest.

In the map view, the current location and direction can be saved by selecting the softkey F1 (GPS Position) followed by “Save Current Position”. The saved GPS locations/stations can be managed by:

- Press the FILE key
- Select softkey F4 (GPS Positions)

Turning on the R&S PR100 for the First Time

GPS Position List					19/09/11 00:14
Number	Include	Latitude	Longitude	Azimuth	Name
1	■	N 38° 17.20730'	E 23° 35.42540'	303.1 °	1
2	■	N 0° 0.00000'	E 0° 0.00000'	30.0 °	a
3	■	N 20° 0.00000'	E 30° 0.00000'	200.0 °	3

Include	Delete	Delete All	View	Exit
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Fig. 3-44: GPS Positions List for management of saved positions

The saved stations can be used in triangulation to obtain an estimated location of the source of a signal. Note that at least two stations must be included in the GPS Positions List for the triangulate function to be available:

- Press F1 (GPS Position)
- Select the "Triangulate" function

The triangulate result will be displayed on the map. It can be saved via the "Save Triangulation" function.

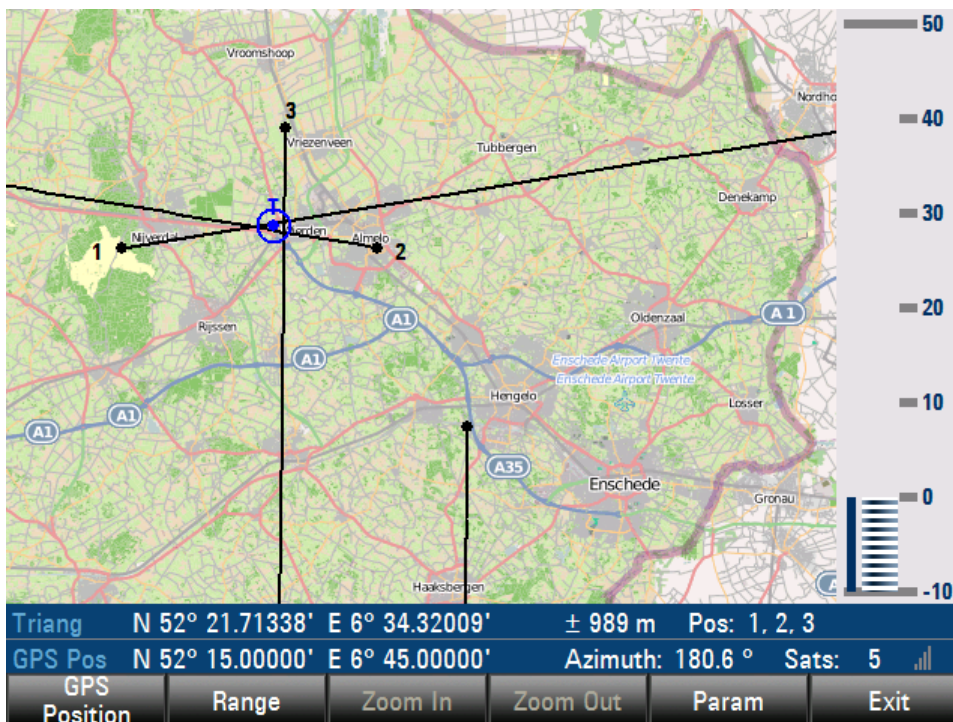


Fig. 3-45: Example of a triangulation result

3.2 Software Update

To operate the R&S PR100 with the latest features, it is recommended to install the newest firmware version.

A new firmware version can be downloaded via the R&S website (www.rohde-schwarz.com, search the terms “R&S PR100 Firmware”).

In order to install the firmware, use one of the two following methods described below.

Software Update via SD Card

Extract the SD Card update zip file contents into the root of an SD card, e.g. R&S HA-Z231, order number 1309.6217.00.

⚠ CAUTION

Please make sure that only one file of each type is present on the SD card. The update mechanism will reject the card if it detects two versions of a file type and abort the update later on.

- Switch the R&S PR100 off
- Insert the SD card into the SD card slot on the right side of the R&S PR100
- Connect a mains-adaptor (otherwise the R&S PR100 will refuse to start the firmware update)
- While pressing the buttons [LOCK] (11) and [8] (numerical keypad, 6) at the same time, switch on the R&S PR100 using POWER BUTTON (7)
Keep both buttons [LOCK] and [8] pressed for about 5 seconds after switching on the R&S PR100
- Continue following the instructions on the R&S PR100's screen

⚠ CAUTION

Risk of damage to the R&S PR100

DURING FIRMWARE UPGRADE, DO NOT TURN OFF THE R&S PR100!

- In order to make the update effective, turn off the R&S PR100 and turn it on again.
- During the first start up after updating the firmware, press the buttons [LOCK] (11) and [F6] (3) for about 5 seconds. This will format the R&S PR100's file system to start from a defined basis after the update.
- Formatting process takes about 5 minutes.
- Your R&S PR100 is now updated successfully.



After upgrading firmware from **1.04 or 1.12** to a newer version, all option codes need to be re-entered

Software Update via LAN

For upgrade via LAN , you need to have the RC (Remote Control) option installed.

Option Code Activation

- Connect a mains-adaptor (otherwise the R&S PR100 will refuse to start the firmware update).
- Insert an SD card into the R&S PR100
- Ensure the R&S PR100 is connected to a computer via LAN cable
- Execute the LAN update software
- Enter the appropriate IP address and SCPI port of the R&S PR100 and click on the update button. The firmware will then be downloaded to the R&S PR100.

⚠ CAUTION

Risk of damage to the R&S PR100

DURING FIRMWARE UPGRADE, DO NOT TURN OFF THE R&S PR100!

- In order to make the update effective, turn off the R&S PR100 and turn it on again.
- During the first start up after updating the firmware, press the buttons [LOCK] (11) and [F6] (3) for about 5 seconds. This will format the R&S PR100's file system to start from a defined basis after the update.
- Formatting process takes about 5 minutes.
- Your R&S PR100 is now updated successfully.

3.3 Option Code Activation

- Press the CONF key (5).
- Press the GENERAL softkey.

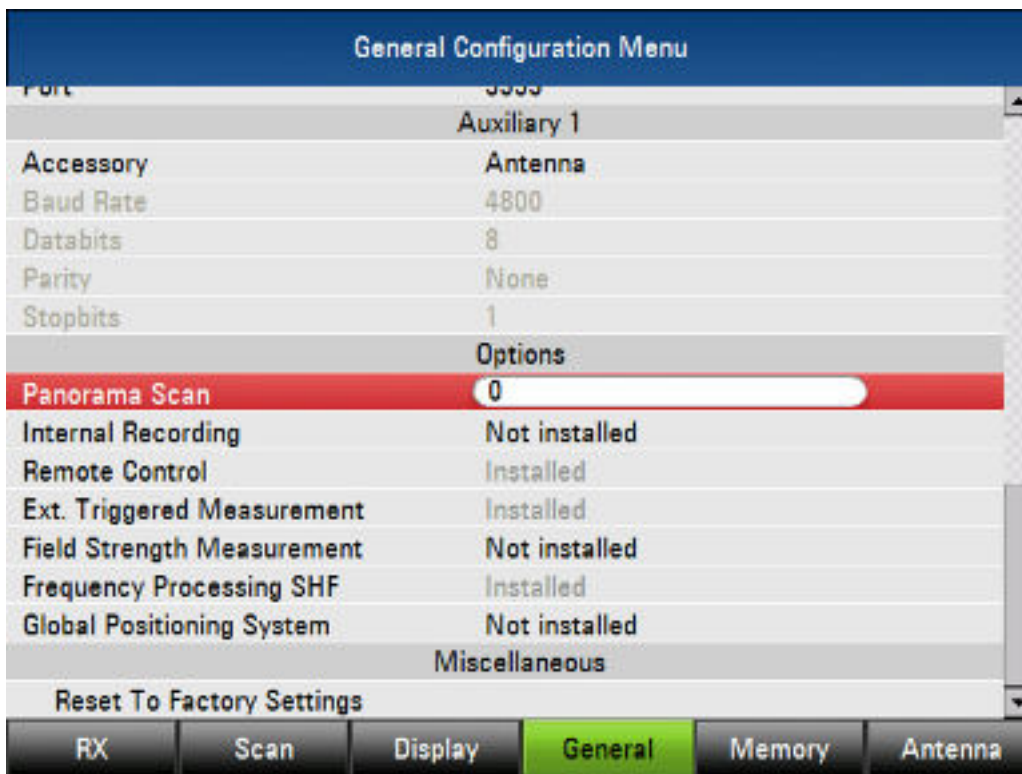


Fig. 3-46: Options in the configuration menu

- Select the option and press ENTER key (8)
- Enter the option code
- Confirm the option code by pressing the ENTER key (8).

If the correct code is entered the option will be displayed as installed and can be used immediately.

4 Maintenance

4.1 Preventive Maintenance

Any dirt should be removed from the R&S PR100 with a soft damp cloth and a mild detergent.

In case of a fault the following safety-critical parts should only be replaced with original Rohde & Schwarz spare parts:

Power adaptor	1309.6100.00
Battery charger	1309.6123.00
Six-cell battery pack	1309.6149.00

4.2 Cleaning

Clean the outside of the R&S PR100 using a soft, lint-free dust cloth.

NOTICE**Damage caused by cleaning agents**

Cleaning agents contain substances that may damage the R&S PR100, e.g. solvent-containing cleaning agents may damage the front panel labeling or plastic parts. Never use cleaning agents such as solvents (thinners, acetone, etc), acids, bases, or other substances.

4.3 Storing and Packing

The R&S PR100 can be stored at the temperature range quoted in the specifications (check the "Service" section in the Operating Manual). When it is stored for a longer period of time the R&S PR100 should be protected against dust. The original packing should be used, particularly the protective caps at the front and

rear, when the R&S PR100 is to be transported or dispatched. If the original packing is no longer available, use a sturdy cardboard box of suitable size and carefully wrap the R&S PR100 to protect it against mechanical damage.

4.4 Battery Storage

The R&S PR100 comes with a lithium-ion battery. The battery self-discharges when not in use. Thus when storing the battery for an extended period of time, make sure to:

- Keep the battery in the supplied packaging prior to use. The temperature should not exceed 30 degrees Celsius.
- Store the battery at an initial charge of 15% to 50% of the full battery capacity.
- Recharge the battery at least once every 6 months, to avoid deep or total discharge of the battery. When deep or total discharge of the battery occurs, the battery protection circuit is activated and the battery cannot be charged by the R&S PR100.