

# R&S® DDF007

## Portable Direction Finder

Full range of functions in a handheld format



# R&S®DDF007 Portable Direction Finder At a glance

The R&S®DDF007 portable direction finder has an integrated, fast wideband receiver that covers a very wide frequency range. The battery-operated unit relies on high-precision DF methods. The R&S®DDF007 is used in conjunction with compact DF antennas, making it ideal for all applications that call for a powerful yet handy direction finder.



The DF system consists of the R&S®DDF007 portable direction finder and a compact DF antenna (R&S®ADD107, R&S®ADD207 or R&S®ADD307). The DF antennas come with an integrated GPS module, an electronic compass and an optional magnet mount vehicle adapter. Installing the portable direction finder in a commercial vehicle takes no more than a few minutes.

The direction finder's integrated wideband receiver offers ample functionality for signal detection and display, including a panorama scan function (optional) for the fast scanning of wide frequency ranges and a fast spectrogram (waterfall) display.

The optional, integrated map display function including triangulation makes it possible to visualize DF results on a map and locate transmitters by means of a running fix.

## Key facts

- Wide frequency range from 20 MHz to 6 GHz (DF mode) and 9 kHz to 7.5 GHz (receive mode)
- High-precision correlative interferometer DF method
- Integrated, fast wideband receiver with optional panorama scan for fast scanning of wide frequency ranges
- Compact, multi-element DF antennas with integrated GPS module and electronic compass; optional magnet mount adapter for fast antenna installation on a vehicle roof
- Optional, integrated map display function including triangulation for transmitter location by means of a running fix
- Compact, lightweight lithium-ion battery pack for two hours of DF operation or four hours of receive operation on a single battery charge

# R&S® DDF007

## Portable Direction Finder

### Benefits and key features

#### **Integrated, fast wideband receiver**

- ▮ Detailed IF spectrum display at high bandwidths
- ▮ Fast spectrum monitoring
- ▮ Demodulation of wideband signals
- ▮ Signal analysis in receive mode (option)
- ▮ Polychrome spectrum to distinguish superimposed, pulsed signals (option)
- ▮ Occupied bandwidth measurement

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#### **High-precision DF method**

- ▮ Correlative interferometer DF method
- ▮ Watson-Watt DF method (for R&S® ADD107 below 173 MHz)

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#### **Integrated map display (option)**

- ▮ Integration of OpenStreetMap (OSM) digital maps
- ▮ Triangulation-based radiolocation

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#### **High-resolution IF spectrum**

- ▮ All details visible in DF mode

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#### **Control and system software**

- ▮ R&S® DF7-CTL control software
- ▮ R&S® RAMON software components (options)

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#### **Innovative, compact DF antennas and accessories**

- ▮ Multi-element DF antennas
- ▮ Integrated GPS module and electronic compass
- ▮ Vehicle adapter with magnet mount (option)
- ▮ Lightweight wooden tripod (option)
- ▮ Transportation bag and DF antenna backpack (options)

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#### **Homing in on a transmitter**

- ▮ Locating a transmitter at close range
- ▮ Frequency range extendable up to 18 GHz

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# Integrated, fast wideband receiver

## Detailed IF spectrum display at high bandwidths

In the IF panorama mode, the R&S®DDF007 fully displays signals up to a bandwidth of 10 MHz. The waterfall display can additionally be activated to visualize signal behavior versus time. The IF panorama mode provides detailed signal analysis with high resolution. Even events of extremely short durations are reliably detected in this mode.

## Fast spectrum monitoring

The R&S®DDF007 can be equipped with the R&S®DDF007-PS panorama scan option. This enables fast scanning at speeds of up to 2 GHz/s to obtain a quick overview of the spectrum. A bearing can be taken of each signal of interest detected during the panorama scan by simply pressing a key.

## Demodulation of wideband signals

The R&S®DDF007 demodulates signals with a bandwidth of up to 500 kHz and outputs them as I/Q data that can be used for signal analysis, for example (requires R&S®DDF007-RC option). It also demodulates analog modulated signals and outputs them for monitoring.

## Signal analysis in receive mode (option)

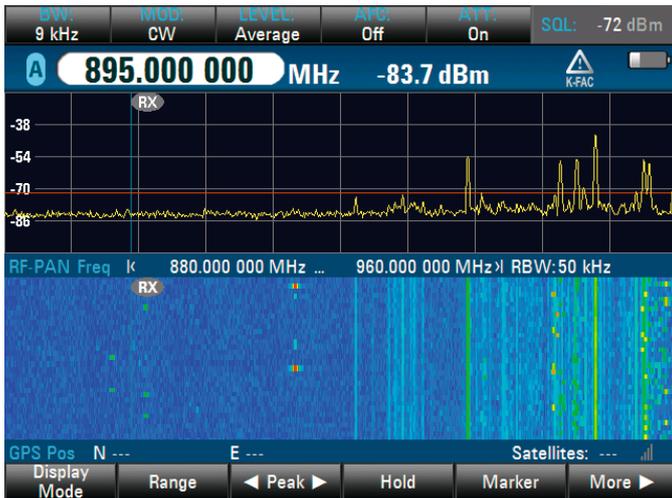
The powerful R&S®CA100 PC-based signal analysis and processing software, which runs on an external PC, can be used in receive mode to analyze and classify signals using different types of modulation. The I/Q data is output via the direction finder's Ethernet interface to the PC running the R&S®CA100 software.

## Polychrome spectrum to distinguish superimposed, pulsed signals (option)

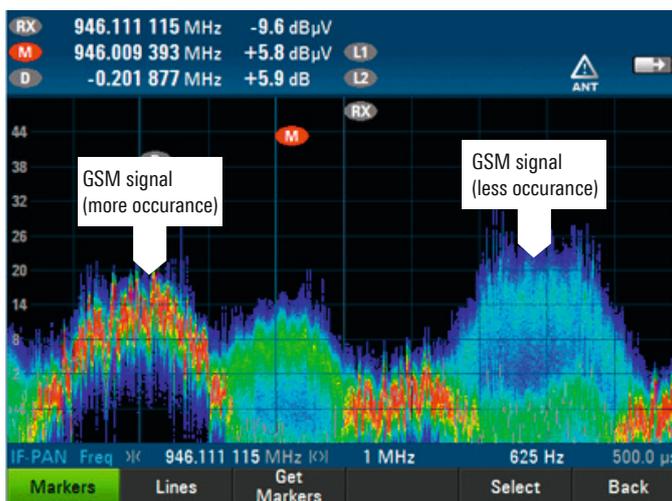
The polychrome spectrum display makes it possible to separate superimposed, pulsed signals that cannot be differentiated using conventional methods (e.g. spectrum, waterfall, max. hold). The polychrome spectrum is very useful for signal separation, for example to extract pulsed interfering signals superimposed on pulsed wanted signals (GSM, DECT).

## Occupied bandwidth measurement

The R&S®DDF007 allows measurement of occupied bandwidth of the emission in accordance with the measurement methods recommended in Recommendation ITU-R SM.443, i.e. the  $\beta$  % method or the x dB method. The channel power measurement of the emission is also provided. This function is included in the base unit.



R&S®DDF007 in panorama scan mode.



Superimposed, pulsed signals (e.g. GSM-900 downlink segment) are displayed in different colors based on how often they occur and can be more easily analyzed than with max. hold processing.

# High-precision DF method

## Correlative interferometer DF method

The R&S®DDF007 uses the correlative interferometer DF method in conjunction with an R&S®ADDx07 compact DF antenna. In contrast to other direction finders using simple amplitude comparison methods, the R&S®DDF007 offers significantly higher DF accuracy up to class A in line with ITU recommendations.

This high DF accuracy relies on the precise measurement of the phase angles between the reference antenna element and the other elements. Measuring the phase difference between two signals normally requires two coherent receive paths. For this reason, most interferometer direction finders on the market use at least two receivers. With the R&S®DDF007, the two receive paths are coherently linked in the DF antenna using a patented method from Rohde&Schwarz. As a result, the single-channel interferometer DF method implemented in the Rohde&Schwarz direction finder provides the same DF accuracy and immunity to reflections as delivered by direction finders with two or more receive paths – without requiring additional hardware.

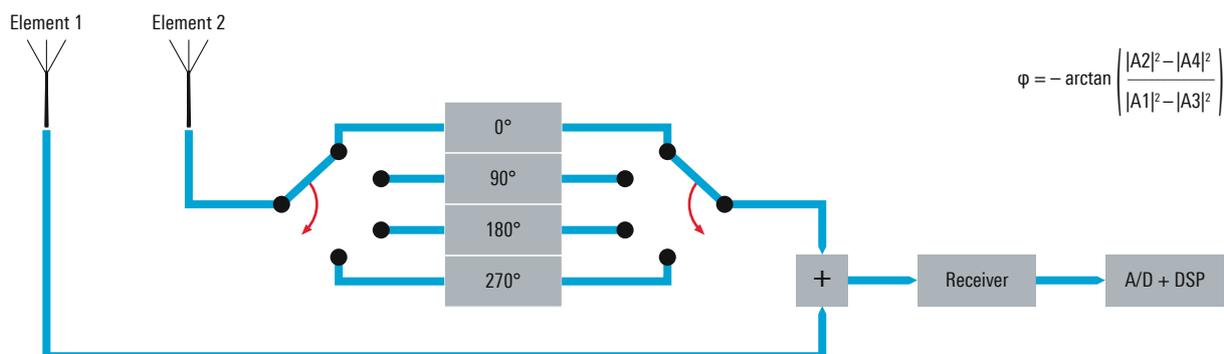
For the R&S®ADD107 VHF/UHF DF antenna, the Watson-Watt DF method is used in the frequency range below 173 MHz. This method offers high DF accuracy even for small DF antennas.

### Single-channel interferometer DF method

The correlative interferometer DF method is based on measuring the phase differences between the reference antenna element and the other elements of a DF antenna. To measure the phase angle  $\varphi$  between the signals of two antenna elements by means of a single receiver – independently of the frequency and phase modulation of the signal to be measured –, a patented method from Rohde&Schwarz is used. With this method the phase of one of the two signals is shifted in four steps ( $0^\circ/90^\circ/180^\circ/270^\circ$ ) in a quadrature multiplexer, and the two signals are added in each case. The receiver measures the amplitude of the sum signal after each phase shift. Inserting the four amplitude values obtained ( $A1/A2/A3/A4$ ) into the formula (see diagram) yields the phase angle  $\varphi$  between the two signals. This measurement is performed for each antenna element.

Most interferometer direction finders on the market use at least two receivers. The two receive paths must be in phase and need to be calibrated accordingly since otherwise the measurement time will be significantly extended. Moreover, the local oscillator signals need to be multiplied and distributed in-phase. This means that more hardware is necessary than with a single-channel interferometer direction finder: an additional receive path, in-phase multiplication and distribution of the local oscillator signals, a calibration signal generator, calibration signal distribution and an additional cable to the DF antenna for the calibration signal.

### Single-channel interferometer DF method



# Integrated map display (option)

## Integration of OpenStreetMap (OSM) digital maps

The R&S®DDF007-GPS option makes it possible to display DF and radiolocation results in OSM maps on the R&S®DDF007. Users can download these maps from the Internet using the R&S®OpenStreetMapWizard (OSMWizard) included with the R&S®DDF007. The files can then be copied to the SD card of the R&S®DDF007 to make them available for field use. The R&S®DDF007 compares its current GPS position with the available map data and automatically selects the appropriate map.

## Triangulation-based radiolocation

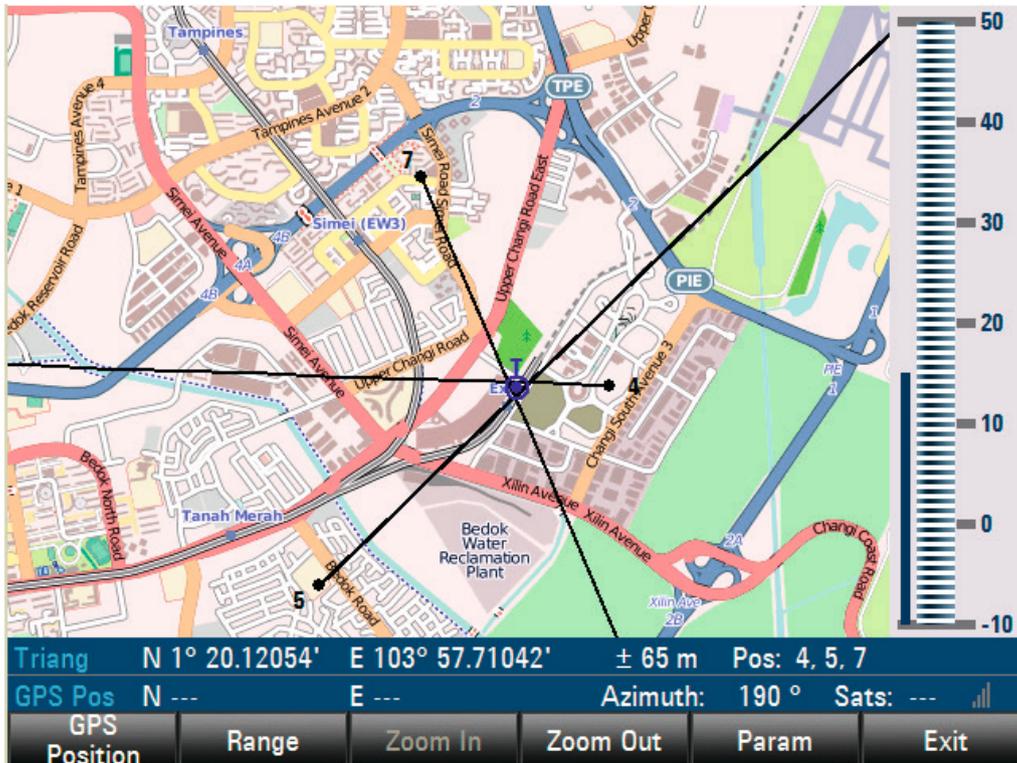
In addition to visualizing DF results on a map, the R&S®DDF007-GPS option makes it possible to locate transmitters by means of a running fix. For this purpose, bearings are taken at multiple locations and, from the results, the transmitter location is calculated using triangulation. The transmitter location is then displayed on a map.

### OpenStreetMap (OSM)

OpenStreetMap (OSM) is a user-editable world map that is available at the following Internet address:  
<http://www.openstreetmap.org/>

OSM is a wiki project in which users can participate by uploading and editing geographical information such as GPS tracking data or the course of a road or river. This world map is growing daily.

OpenStreetMap data can be used freely under the terms of the Creative Commons Attribution-ShareAlike 2.0 license.

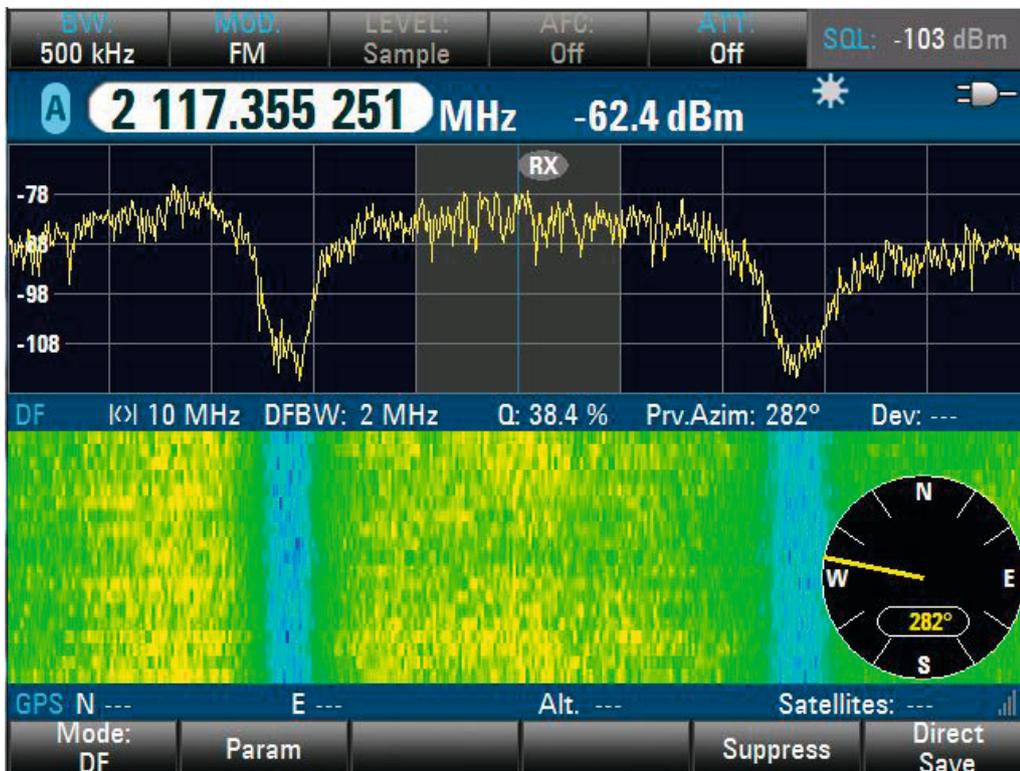


R&S®DDF007 with map display and triangulation.

# High-resolution IF spectrum

## All details visible in DF mode

In order to obtain stable and accurate DF results, a sufficiently wide DF bandwidth is required, i.e. the DF bandwidth should be similar to the signal bandwidth. Typically, this results in a coarse spectrum resolution. In many applications, a much finer channel resolution in the IF spectrum is required in order to see details in the spectrum that are not visible otherwise. Now the R&S®DDF007 offers both: an IF spectrum with fine resolution for spectrum display and a DF spectrum with coarse resolution for direction finding (see screenshot). Both resolutions can be set independently.



WCDMA signal measured with 2 MHz DF bandwidth and displayed at high resolution.

# Control and system software

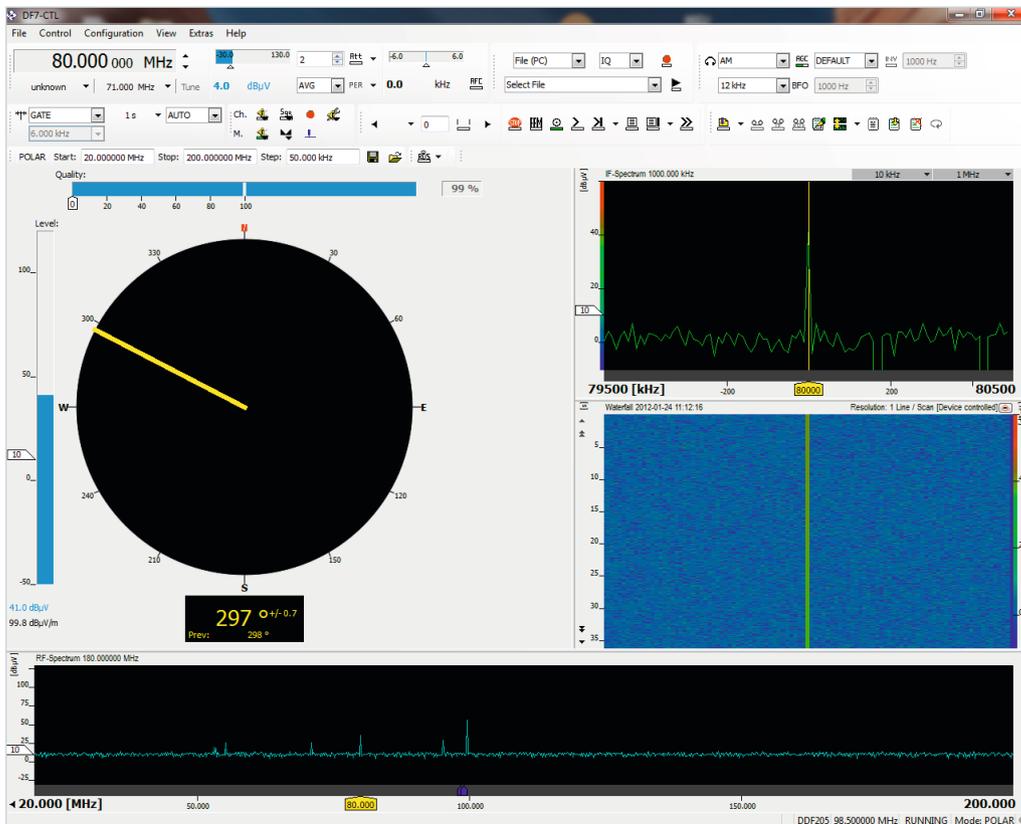
## R&S®DF7-CTL control software

- ▮ Control of the R&S®DDF007 from a PC or laptop
- ▮ Included with the R&S®DDF007

Use of the R&S®DF7-CTL software requires the R&S®DDF007-RC remote control option.

## R&S®RAMON software components (options)

- ▮ Remote control of R&S®DDF007 DF stations
- ▮ Enhanced map display functions
- ▮ Integration of application-specific maps
- ▮ Intelligent, automatic direction finding using the R&S®MobileLocator software (included in the R&S®RA-LOC option)
- ▮ Integration of the R&S®DDF007 into radiolocation networks
- ▮ Task and result management



R&S®DF7-CTL control software.

# Innovative, compact DF antennas and accessories

## Multi-element DF antennas

The R&S®ADD107 and R&S®ADD207 compact DF antennas feature an exceptionally large number of antenna elements in the frequency range above 173 MHz. They use eight antenna elements in this range, while commercially available DF antennas typically have only four. The R&S®ADD107 and R&S®ADD207 compact DF antennas therefore set new standards in their class with respect to DF accuracy and sensitivity.

For maximum DF accuracy and sensitivity in portable applications, the R&S®DDF007 can be combined with the R&S®ADD307 collapsible VHF/UHF DF antenna. This combination delivers significantly wider coverage in the VHF range. The antenna's integrated GPS module and electronic compass allow quick and easy system setup.



R&S®ADD107/207 compact DF antenna with R&S®ADD17XZ3 vehicle adapter with magnet mount and R&S®ADD17XZ5 cable set.

## R&S®ADD107 compact VHF/UHF DF antenna

- ▮ Frequency range from 20 MHz to 1.3 GHz
- ▮ Above 173 MHz:
  - High-precision correlative interferometer DF method
  - Multi-element DF antenna with eight antenna elements
- ▮ Below 173 MHz:
  - Powerful Watson-Watt DF method
- ▮ Integrated electronic compass
- ▮ Integrated GPS module with GPS antenna
- ▮ R&S®ADD17XZ3 vehicle adapter with magnet mount for fast antenna installation on a vehicle roof (option)
- ▮ R&S®ADD17XZ6 wooden tripod (option)

## R&S®ADD207 compact UHF/SHF DF antenna

- ▮ Frequency range from 690 MHz to 6 GHz
- ▮ High-precision correlative interferometer DF method
- ▮ Two multi-element DF antennas mounted one above the other, each containing eight elements
- ▮ Integrated electronic compass
- ▮ Integrated GPS module with GPS antenna
- ▮ R&S®ADD17XZ3 vehicle adapter with magnet mount for fast antenna installation on a vehicle roof (option)
- ▮ R&S®ADD17XZ6 wooden tripod (option)

## R&S®ADD307 collapsible VHF/UHF DF antenna

- ▮ Portable DF antenna from 20 MHz to 690 MHz
- ▮ Accurate correlative interferometer DF antenna, optimized for size and weight (approx. 6 kg)
- ▮ Collapsible design
- ▮ Active antenna elements
- ▮ Integrated GPS module and electronic compass
- ▮ For installation on a tripod or portable mast



R&S®ADD307 collapsible VHF/UHF DF antenna.

### Integrated GPS module and electronic compass

The R&S®ADD107 and R&S®ADD207 compact DF antennas have an integrated GPS module including a GPS antenna that continuously determines the current location of the DF antenna. The antennas also contain an electronic compass that continuously measures the antenna's alignment to magnetic north to ensure that the DF values displayed on a map are accurately referenced to north. The electronic compass is used when the R&S®ADD107 or R&S®ADD207 is mounted on a tripod for stationary operation.

When the R&S®ADD107 or R&S®ADD207 is mounted on a vehicle roof with the R&S®ADD17XZ3 adapter, it is advisable to use the GPS function to calculate the vehicle's orientation relative to geographical north.

### Vehicle adapter with magnet mount (option)

The R&S®ADD17XZ3 vehicle adapter with magnet mount makes it quick and easy to install the R&S®ADD107 or R&S®ADD207 on a vehicle roof. With its large magnetic surface and ability to adapt to slightly curved vehicle roofs, the adapter has been approved for speeds up to 130 km/h.

### Lightweight wooden tripod (option)

The R&S®ADD17XZ6 wooden tripod allows the quick setup of a DF station with an antenna height of up to 2 m above ground. As the tripod is mainly made of wood, there will be no impairment of DF accuracy.

### Transportation bag and DF antenna backpack (options)

The R&S®DDF007 DF system can be carried and transported conveniently using the R&S®ADD17XZ7 tripod bag and R&S®ADD17XZ8 backpack. The R&S®ADD17XZ6 wooden tripod is packed in the R&S®ADD17XZ7 tripod bag. The DF system – consisting of one R&S®DDF007, one R&S®ADD107 or R&S®ADD207 compact DF antenna, an R&S®ADD17XZ5 cable set and an R&S®ADD17XZ3 vehicle adapter with magnet mount – is packed in the R&S®ADD17XZ8 backpack. These bags are specially designed to pack the equipment in a compact and secure way for mobility, ease of handling and storage.

Application examples: See application brochure "Locating radio transmitters" (PD 3606.7099.92).



R&S®ADD17XZ7 tripod bag, for R&S®ADD17XZ6.

R&S®ADD17XZ6 wooden tripod.

R&S®ADD17XZ8 DF antenna backpack (left: closed; right: open) to transport the DF system (one R&S®DDF007, one DF antenna, cable set and vehicle adapter with magnet mount).

# Homing in on a transmitter

## Locating a transmitter at close range

For homing in on a transmitter, such as pinpointing individual rooms within a building, instead of the DF antenna the R&S®HE400 handheld directional antenna can be connected to the R&S®DDF007.

## Frequency range extendable up to 18 GHz

The R&S®HF907DC SHF DF antenna with downconverter extends the receiving frequency range of the portable direction finder up to 18 GHz. The user can then take advantage of the rich feature set of the R&S®DDF007 up to 18 GHz, for example to detect interference caused by directional radio link communications.



The R&S®HE400 handheld directional antenna including GPS module and electronic compass, connected to the R&S®PR100.



R&S®HF907DC SHF antenna for extending frequency range up to 18 GHz.

# Specifications in brief

| Specifications in brief                            |  |   |
|--|--|---|
| <b>DF mode</b>                                     |  |   |
| Frequency range                                    | with R&S®ADD107  | 20 MHz to 1.3 GHz   |
|  | with R&S®ADD207  | 690 MHz to 6 GHz  |
|  | with R&S®ADD307  | 20 MHz to 690 MHz   |
| DF method  | with R&S®ADD207 or R&S®ADD307 DF antenna, or with R&S®ADD107 DF antenna above 173 MHz  | correlative interferometer  |
|  | with R&S®ADD107 DF antenna below 173 MHz   | Watson-Watt   |
| Display resolution                                 | selectable   | 0.1° or 1°  |
| System DF accuracy                                 | depends on DF antenna (i.e. R&S®ADD207 or R&S®ADD307), in reflection-free environment  |   |
|  | 20 MHz to 6 GHz  | typ. 1° (RMS)   |
| DF sensitivity                                     | depends on DF antenna (i.e. R&S®ADD207 or R&S®ADD307), for 5° RMS DF fluctuation, 5 s integration time and 600 Hz DF bandwidth |   |
|  | 20 MHz to 50 MHz   | typ. 2 µV/m to 8 µV/m   |
|  | 50 MHz to 3 GHz  | typ. 1.0 µV/m   |
|  | 3 GHz to 6 GHz   | typ. 2 µV/m to 8 µV/m   |
| Minimum signal duration                            | for a single burst signal  | 10 ms   |
| Minimum burst duration                             | for multiple burst signals   | 0.5 ms  |
| <b>Receive mode</b>                                |  |   |
| Frequency range                                    | with separate receiving antenna  | 9 kHz to 7.5 GHz  |
| Scan speed   | with R&S®DDF007-PS panorama scan option  | up to 2 GHz/s   |
| IF spectrum display range                          | selectable   | up to 10 MHz  |
| Demodulation bandwidth                             | selectable   | up to 500 kHz   |
| <b>General data</b>                                |  |   |
| Lithium-ion battery pack operating time per charge | DF mode  | approx. 2 h   |
|  | receive mode, with separate receiving antenna  | approx. 4 h   |
| Dimensions   | base unit  | approx. 192 mm × 320 mm × 62 mm<br>(7.56 in × 12.60 in × 2.44 in) |
| Weight   | base unit with battery pack  | approx. 3.5 kg (7.72 lb)  |

For data sheet, see PD 5214.3700.22 and [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

# Ordering information

| Designation  | Type           | Order No.    |
|--|----------------|--------------|
| <b>Base unit</b>   |                |              |
| Portable Direction Finder<br>IF spectrum (max. 10 MHz), spectrogram (waterfall display), 6-cell lithium-ion battery pack, plug-in power supply, SD card for storing user settings, shoulder strap, R&S®DF7-CTL control software (requires R&S®DDF007-RC remote control option)   | R&S®DDF007     | 4090.5019.02 |
| Documentation of Calibration Values  | R&S®DDF007-DCV | 4090.5090.02 |
| <b>Software options</b>  |                |              |
| Panorama Scan<br>RF scan, high-speed FFT scan across user-selectable scan range, selectable spectral resolution (bin width)  | R&S®DDF007-PS  | 4090.5025.02 |
| Internal Recording<br>recording of measured data in the R&S®DDF007 (64 Mbyte RAM) or on SD card, recording of audio data in WAV format (replay using Windows Media Player, for example), recording of I/Q data, spectra and spectrogram (waterfall) data, R&S®DF7-CTL for viewing measured data on customer PC   | R&S®DDF007-IR  | 4090.5031.02 |
| Remote Control<br>remote control of the R&S®DDF007 via LAN interface (SCPI protocol); transfer of measured data via LAN interface; transfer of demodulated I/Q data (up to 500 kHz bandwidth) via LAN interface; R&S®DF7-CTL software (for remote control, data recording and data playback on customer PC)  | R&S®DDF007-RC  | 4090.5048.02 |
| Externally Triggered Measurements<br>an external sensor (not supplied with the R&S®DDF007) triggers a measurement in the R&S®DDF007; the sensor is connected via the AUX interface   | R&S®DDF007-ETM | 4090.5054.02 |
| Field Strength Measurement<br>field strength is calculated using antenna factors stored in the R&S®DDF007; the R&S®DDF007 displays the field strength directly in dB $\mu$ V/m   | R&S®DDF007-FS  | 4090.5060.02 |
| SHF Frequency Processing for downconverter antennas<br>the downconverter unit of the R&S®HF907DC antenna is connected to the R&S®DDF007 via a control cable; the R&S®DDF007 recalculates the downconverted signals to display them with their original frequencies up to 18 GHz and with the sidebands in their original positions, thus relieving the user from having to convert signals subsequently (antenna and downconverter not supplied with the R&S®DDF007-FP option) | R&S®DDF007-FP  | 4090.5077.02 |
| GPS Software Interface/Map Display<br>for data stream processing of external GPS module (GPS module not included in scope of delivery)   | R&S®DDF007-GPS | 4090.5083.02 |
| Polychrome Spectrum Display<br>adds a color-coded spectrum display to indicate the relative signal occupancy   | R&S®DDF007-PC  | 4090.5102.02 |
| <b>Accessories</b>   |                |              |
| Battery Pack<br>6-cell lithium-ion battery, charging cradle, plug-in power supply  | R&S®PR100-BP   | 4071.9206.02 |
| Suitcase Kit<br>hardshell transit case for the R&S®DDF007 with headphones and telescopic antenna and extra space for accessories   | R&S®PR100-SC   | 4071.9258.02 |
| Vehicle Adapter for Power Supply   | R&S®HA-Z202    | 1309.6117.00 |
| Carrying Holster<br>chest strap and rainproof cover  | R&S®HA-Z222    | 1309.6198.00 |
| Carrying Bag<br>soft carrying bag  | R&S®HA-Z220    | 1309.6175.00 |
| GPS Receiver<br>external GPS receiver for the R&S®DDF007   | R&S®HA-Z240    | 1309.6700.03 |
| Accessory Package 1<br>compatible with R&S®HA-Z222 carrying holster: consists of a sun roof for the LCD and a carrying handle for convenient carrying of the R&S®HA-Z222   | R&S®PR100-AP1  | 3589.9458.00 |
| Handheld Directional Antenna (antenna handle) <sup>1)</sup>  | R&S®HE400      | 4104.6000.02 |
| HF Antenna Module, 8.3 kHz to 30 MHz   | R&S®HE400HF    | 4104.8002.02 |
| VHF Antenna Module, 20 MHz to 200 MHz  | R&S®HE400VHF   | 4104.8202.02 |
| UWB Antenna Module, 30 MHz to 6 GHz  | R&S®HE400UWB   | 4104.6900.02 |
| Log-Periodic Antenna Module, 450 MHz to 6 GHz  | R&S®HE400LP    | 4104.8402.02 |
| Cellular Antenna Module, 700 MHz to 2500 MHz   | R&S®HE400CEL   | 4104.7306.02 |
| Cable Set for R&S®HE400 and R&S®PR100 or R&S®FSH   | R&S®HE400-K    | 4104.7770.02 |
| Transport Case for R&S®HE400   | R&S®HE400Z1    | 4104.9009.02 |
| Transport Bag (small) for R&S®HE400 (recommended for one or two antenna modules)   | R&S®HE400Z2    | 4104.9050.02 |
| Transport Bag (large) for R&S®HE400 (recommended for three or four antenna modules)  | R&S®HE400Z3    | 4104.9080.02 |
| Tripod for R&S®HE400   | R&S®HE400Z4    | 4104.9109.02 |

| Designation  | Type           | Order No.    |
|--|----------------|--------------|
| <b>SHF antenna and accessories</b>   |                |              |
| SHF Directional Antenna with Downconverter   | R&S®HF907DC    | 4070.8006.02 |
| Cable Set  | R&S®HF907DC-K1 | 4070.8958.02 |
| Tripod Adapter   | R&S®HF907DC-Z1 | 4079.3113.02 |
| Carrying Case  | R&S®HF907DC-Z2 | 4079.3207.02 |
| <b>DF antenna and accessories</b>  |                |              |
| Compact VHF/UHF DF Antenna   | R&S®ADD107     | 4090.7005.02 |
| Compact UHF/SHF DF Antenna   | R&S®ADD207     | 4096.0002.02 |
| Collapsible VHF/UHF DF Antenna   | R&S®ADD307     | 4098.2002.07 |
| Vehicle Adapter with Magnet Mount  | R&S®ADD17XZ3   | 4090.8801.02 |
| Cable Set with Converter, length: 5 m  | R&S®ADD17XZ5   | 4090.8660.02 |
| Wooden Tripod  | R&S®ADD17XZ6   | 4090.8860.02 |
| Tripod Bag, for R&S®ADD17XZ6   | R&S®ADD17XZ7   | 4096.1450.02 |
| DF Antenna Backpack, for R&S®DDF007, R&S®ADD107 or R&S®ADD207, R&S®ADD17XZ5 and R&S®ADD17XZ3 | R&S®ADD17XZ8   | 4096.1580.02 |
| Antenna Cable with Converter for R&S®ADD307, length: 5 m                                     | R&S®ADD17XZ9   | 4098.3615.15 |
| Extender Cable RF for R&S®DDF007 and R&S®PR100-DF  | R&S®EXTCABLRF  | 4096.1650.03 |
| Extender Cable Control for R&S®DDF007 and R&S®PR100-DF                                       | R&S®EXTCABLCTL | 4096.1650.04 |
| Extender Cable Set for R&S®DDF007 and R&S®PR100-DF   | R&S®EXTCABLSET | 4096.1650.02 |

<sup>1)</sup> Available from Q4 2016.



R&S®HA-Z202 vehicle adapter.



R&S®HA-Z220 soft carrying bag.



R&S®HA-Z222 carrying holster incl. chest strap and rainproof cover.

## Service options

|  |         |   |
|--|---------|---|
| Extended Warranty, one year                              | R&S®WE1 | Please contact your local Rohde & Schwarz sales office. |
| Extended Warranty, two years                             | R&S®WE2 |   |
| Extended Warranty, three years                           | R&S®WE3 |   |
| Extended Warranty, four years                            | R&S®WE4 |   |
| Extended Warranty with Calibration Coverage, one year    | R&S®CW1 |   |
| Extended Warranty with Calibration Coverage, two years   | R&S®CW2 |   |
| Extended Warranty with Calibration Coverage, three years | R&S®CW3 |   |
| Extended Warranty with Calibration Coverage, four years  | R&S®CW4 |   |

R&S®PR100-BP battery pack, consisting of 6-cell lithium-ion battery, charging cradle and plug-in power supply.



R&S®PR100-SC suitcase kit, consisting of hardshell transit case (trolley case, with headphones and telescopic antenna and extra space for accessories).



## Service that adds value

- | Worldwide
- | Local and personalized
- | Customized and flexible
- | Uncompromising quality
- | Long-term dependability

## About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

## Sustainable product design

- | Environmental compatibility and eco-footprint
- | Energy efficiency and low emissions
- | Longevity and optimized total cost of ownership

Certified Quality Management

**ISO 9001**

Certified Environmental Management

**ISO 14001**

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R&S®DDF007 Portable Direction Finder

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