

R&S®MP007

Portable Direction Finding System

Compact and extremely precise



R&S®MP007 Portable Direction Finding System At a glance

The R&S®MP007 direction finding system is based on the R&S®DDF007 portable direction finder upgrade kit in combination with the R&S®ADDx07 compact DF antennas. The result is a unique combination of functionality and performance in a system of this size. It can be used as a stationary or mobile DF station or as a portable manual direction finder, and can be reconfigured within minutes to meet the requirements of the current situation. The R&S®MP007 comes with a wide range of powerful software options and add-ons, making it an excellent choice for all applications that call for a compact and flexible yet powerful DF system.

The significance of compact DF systems is increasing due to their flexibility, mobility and performance advances. The R&S®MP007 combines the outstanding performance of the R&S®DDF007 with the extremely high DF accuracy of the R&S®ADDx07 DF antennas in a portable DF system. The DF system supports a broad range of applications such as searching for missing persons in difficult terrain, location of radio interference sources, radiomonitoring at large events and protection of friendly forces during out-of-area missions.

When extended to include intelligent charging electronics, a central power supply and other accessories, the R&S®MP007 facilitates an entirely new approach to portable direction finding in urban areas or hard-to-reach locations. Wireless networking of multiple R&S®MP007 systems makes it possible to calculate the location of radio transmitters online and display the results on a digital map.

The tried and tested R&S®RAMON software modules ensure dependable operation using a ruggedized laptop or handheld PC. All of the necessary settings can be conveniently displayed along with the map application for presenting DF results and calculated positions on a digital map. A special version of the control software was developed for use with touchscreens in order to meet the special requirements associated with the small screens used in tablets and handheld PCs.

Key facts

- Outstanding DF accuracy in compact design due to use of the correlative interferometer DF method in the range above 173 MHz
- Wide frequency range from 20 MHz to 6 GHz (DF mode)
- Realtime position fixing for detected transmitters through networking of multiple R&S®MP007 systems
- Extended operating time thanks to high-power battery and optional solar module
- Integration into existing Rohde&Schwarz DF systems



R&S®MP007

Portable Direction Finding System

Benefits and key features

Flexible and easy to use

- ▮ Suitable for outdoor use thanks to environmental protection system
 - ▮ On-the-march use with handheld PC
 - ▮ Semi-mobile operation with a laptop
- ▷ [page 4](#)

Comprehensive control and system software

- ▮ Tried and tested R&S®RAMON control software
 - ▮ Special web-based user interface for tablets and touchscreen operation
 - ▮ Easy to extend functionality with additional system software
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Immediate position fixing in networked operation

- ▮ Networking via wireless communications
 - ▮ Master/slave position fixing of fixed-frequency transmitters
 - ▮ Integration of R&S®MP007 into existing Rohde&Schwarz radiolocation systems
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Integrated, fast wideband receiver

- ▮ Detailed IF spectrum display at high bandwidths
 - ▮ Fast spectrum monitoring
 - ▮ Demodulation of wideband signals
 - ▮ Signal analysis in receive mode (option)
- ▷ [page 9](#)

Components of the R&S®MP007 portable direction finding system



Flexible and easy to use

Suitable for outdoor use thanks to environmental protection system

All of the system components are integrated into a rugged, sealed hard shell case to withstand challenging environments and weather conditions, making the system ideal for standalone use.

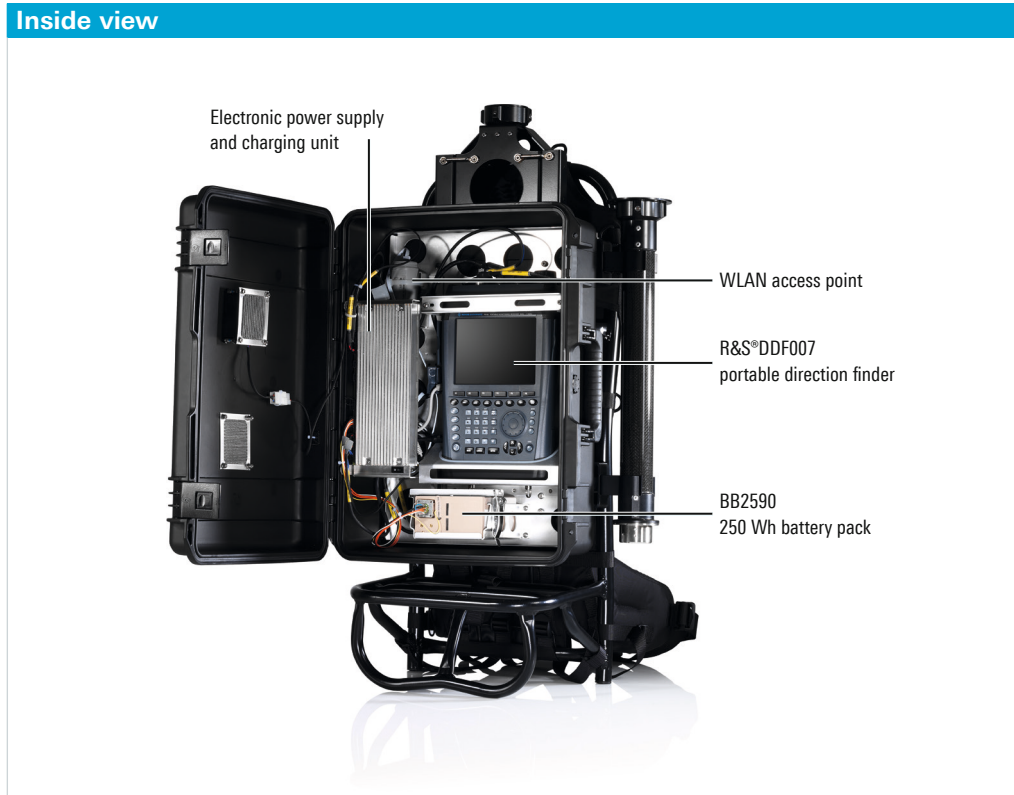
On-the-march use with handheld PC

For protection of friendly forces, the R&S®MP007 can be deployed on the march. The operator carries the backpack on his back and typically operates the system by radio control using a small handheld PC or tablet. A customized version of the control software was developed for this specific deployment scenario to work with the small touchscreens used in today's handheld computers. It has all of the essential functions needed to control the system and includes a digital map display.

Thanks to the integrated GPS compass in the R&S®ADDx07 DF antenna, the operator always knows where he is located with respect to the terrain, where he is looking and where the target signal is coming from. The operator can also demodulate the signal and listen to conversations.

Semi-mobile operation with a laptop

Stationary operation of the system is possible in situations where it is necessary to monitor a specific area over a defined time interval. The carrying frame is placed on the ground and fixed using the supplied guy ropes. The included carbon mast extensions can be used to extend the antenna height to about 1.8 m without a separate tripod. During stationary operation, a ruggedized laptop with the R&S®RAMON software modules is used as the operating computer. Due to the better performance of the laptop, additional software components can be used, e.g. for digital signal analysis.



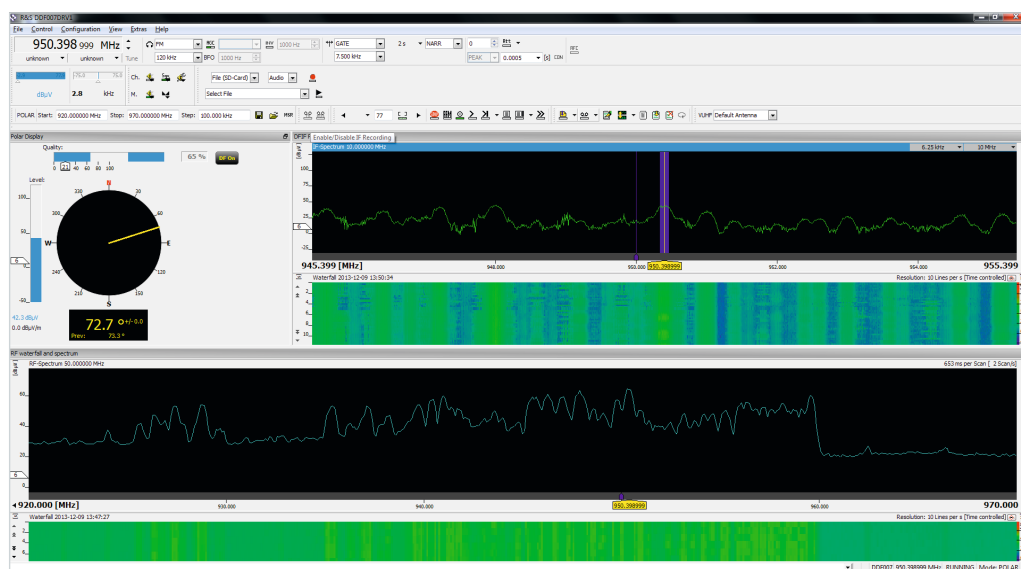
Comprehensive control and system software

Tried and tested R&S®RAMON control software

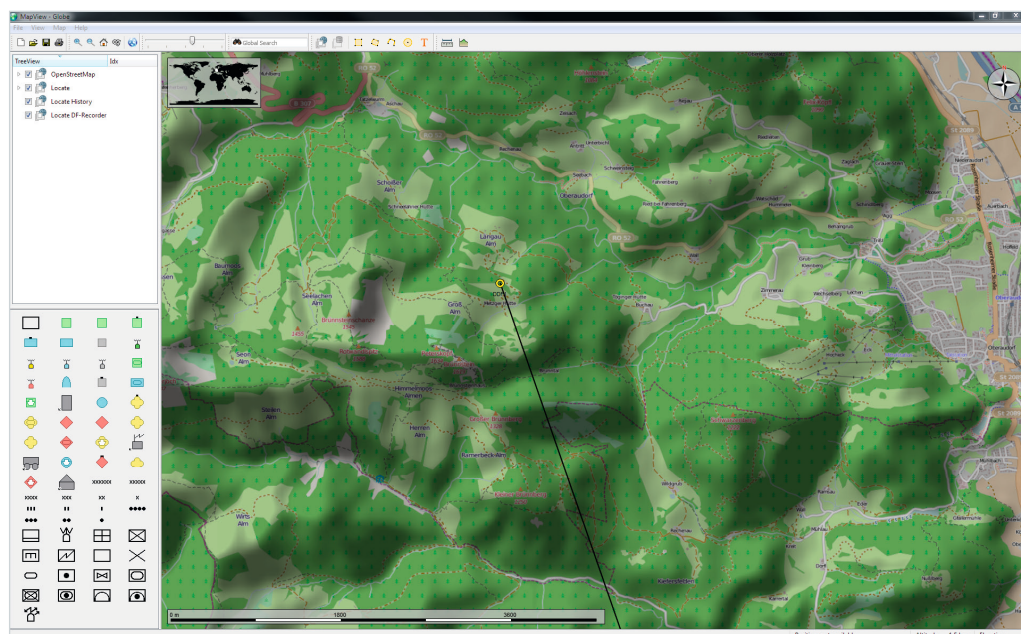
Depending on the type of control computer, different R&S®RAMON software modules are used to control the software. The basic software package includes:

- ▮ R&S®RAMON basic module (R&S®RA-BASIC)
- ▮ R&S®DDF007-CTL control software
- ▮ R&S®Locate radiolocation module
- ▮ R&S®MapView geographic information software
- ▮ R&S®AllAudio integrated digital audio software

R&S®DDF007 user interface.



R&S®MapView map display with position of the R&S®MP007 and DF result.



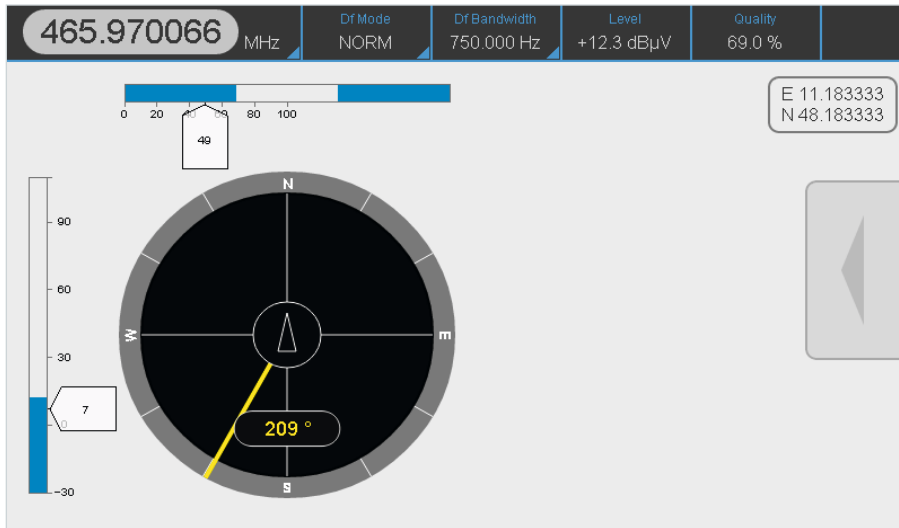
Special web-based user interface for tablets and touchscreen operation

Ease of use is especially critical during mobile operation with a portable system. The small screen size requires a clear focus on the essential functions and the system must be controllable without a mouse and keyboard, e.g. using a touchscreen. The R&S®RAMON user interface has been adapted to meet these requirements. The user interface consists of diverse individual screens that are easy to access via a menu. The user can choose between displaying the spectrum, a polar diagram or an electronic map showing the position of the DF system and the current DF result.

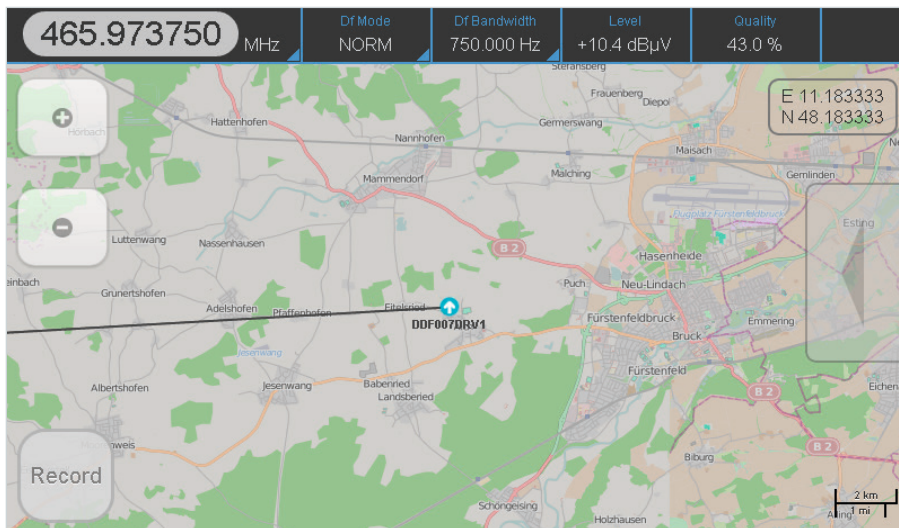
Easy to extend functionality with additional system software

The modular design of the control software makes it easy to extend the system's functional range. The R&S®CA100 signal analysis software, for example, makes it possible to monitor, demodulate and decode digitally modulated signals. A full-featured R&S®RAMON signal and reference database can also be used.

R&S®DDF007 touchscreen user interface.



R&S®DDF007 map display with position of the R&S®MP007 and DF result on touchscreen.



Immediate position fixing in networked operation

Networking via wireless communications

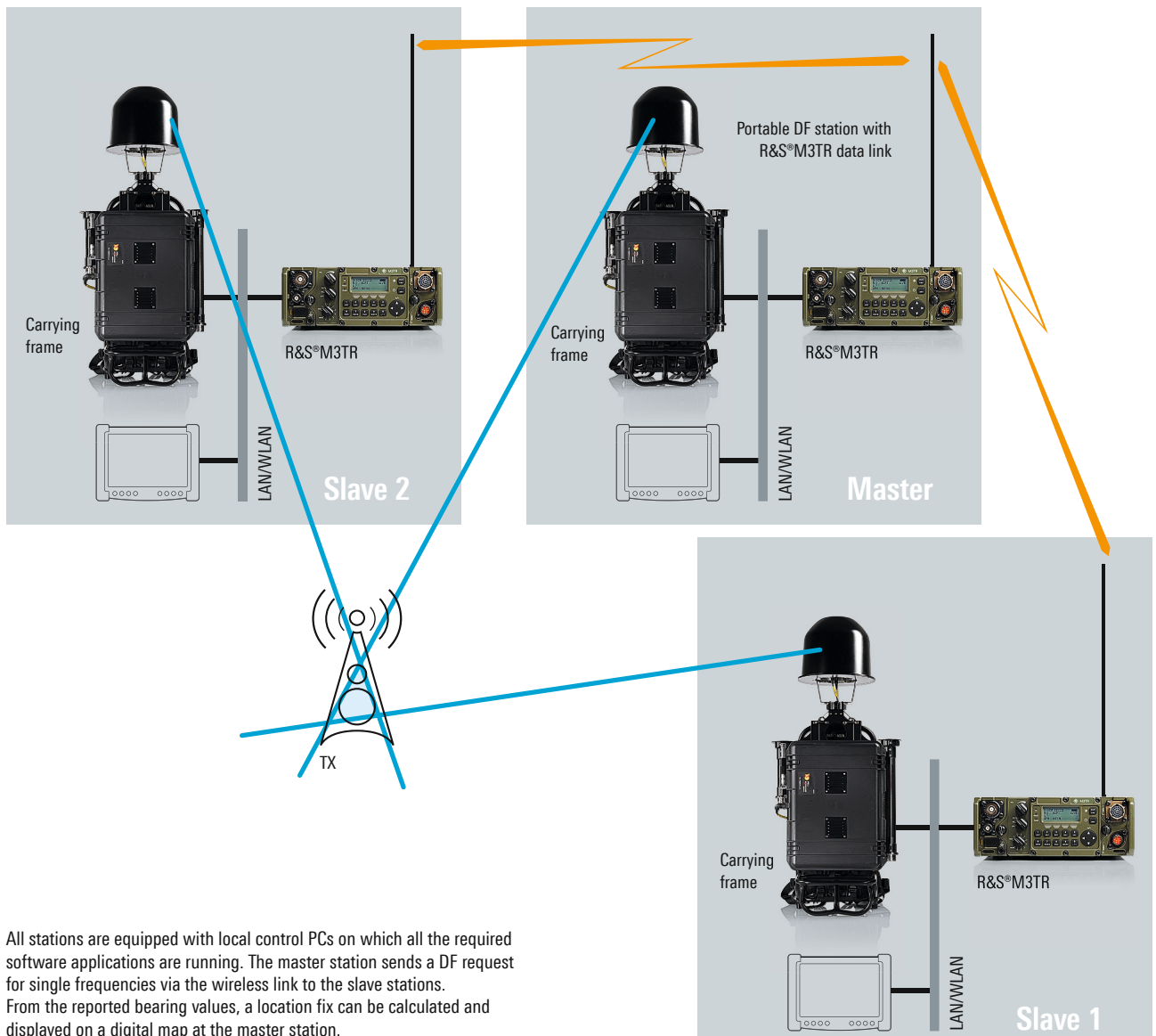
When it is necessary to determine the exact location of an emission, multiple R&S®MP007 systems can be wirelessly connected to a radiolocation system. The relevant connections can be established using WLAN or WiMAX™ radio links, for example, which allow broadband data

transfer. Another possibility is a connection based on tactical radiocommunications, e.g. with the R&S®M3TR or R&S®SDTR. Networked operation of multiple R&S®MP007 systems requires additional hardware and software and, if necessary, system integration.

Master/slave position fixing of fixed-frequency transmitters

In networked operation, one R&S®MP007 can be defined as the master station to remotely control the other stations. Depending on the wireless connection, DF data is obtained by continuous queries (e.g. with WiMAX™ connections) or single queries (e.g. with tactical radio). The DF results reported by the stations are converted into locations by the master station and immediately displayed on the map.

Radiolocation in networked operations with three R&S®MP007 stations



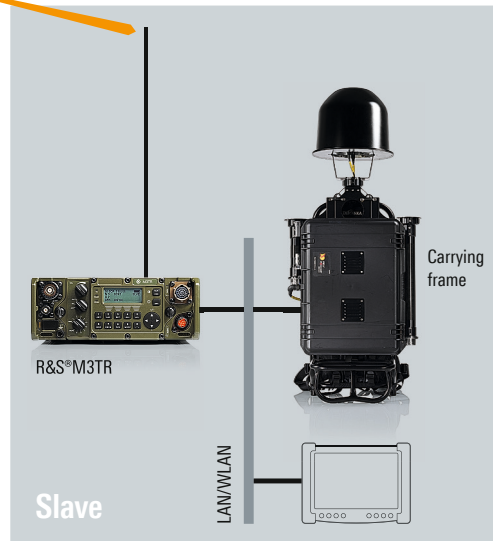
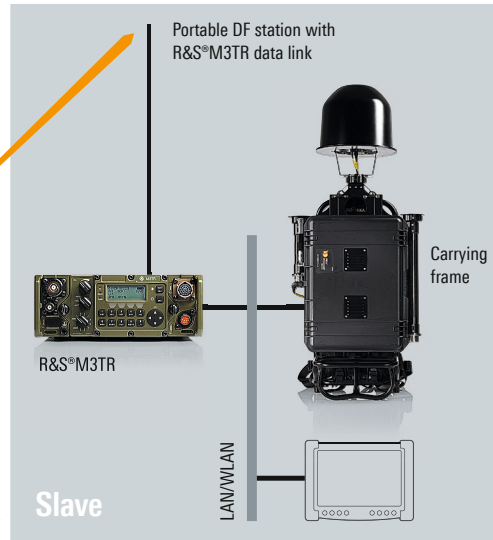
All stations are equipped with local control PCs on which all the required software applications are running. The master station sends a DF request for single frequencies via the wireless link to the slave stations. From the reported bearing values, a location fix can be calculated and displayed on a digital map at the master station.

Integration of R&S®MP007 into existing Rohde & Schwarz radiolocation systems

The R&S®MP007 can be integrated into existing monitoring systems where it functions as an additional DF station. The R&S®MP007 is usually connected to systems via wireless data connections.

Integration into existing Rohde & Schwarz radiolocation systems

Data link to control center



Integrated, fast wideband receiver

Detailed IF spectrum display at high bandwidths

In the IF panorama mode, the R&S®MP007 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 with extremely short durations are reliably detected in this mode.

Fast spectrum monitoring

The R&S®MP007 can be equipped with the 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 detected during the panorama scan by simply pressing a key.

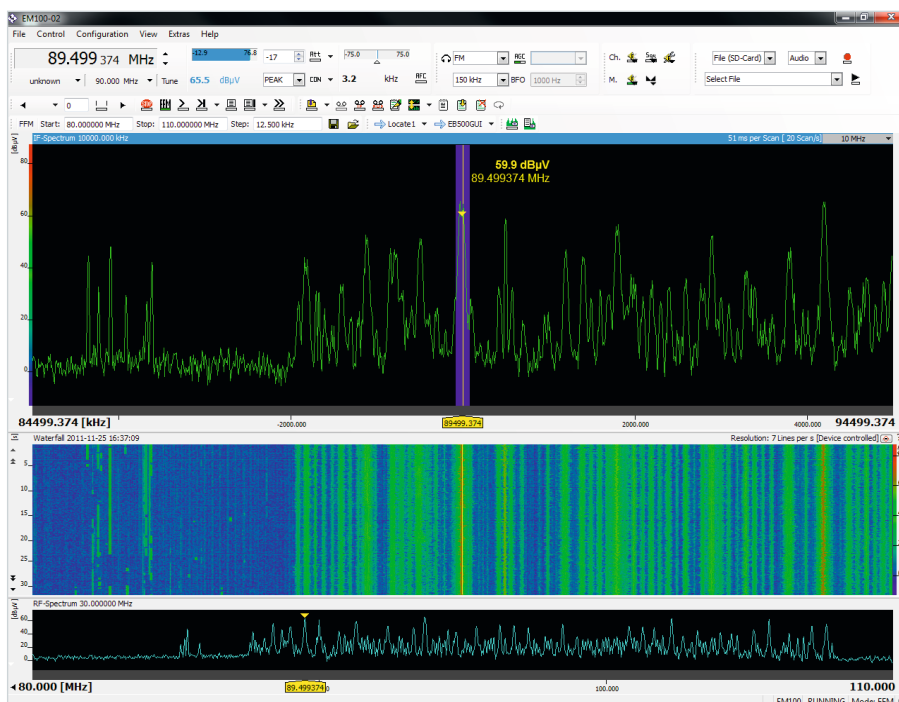
Demodulation of wideband signals

The R&S®MP007 demodulates signals with a bandwidth of up to 500 kHz and outputs them as I/Q data that can be used in signal analysis, for example. 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 the control computer, can be used in receive mode to analyze, classify, demodulate and decode signals with different types of modulation. The I/Q data is output via the radio direction finder's Ethernet interface to the PC running the signal analysis software.

R&S®DDF007s user interface in receive mode.



Specifications

Specifications		
DF mode		
Frequency range	R&S®ADD107	20 MHz to 1.3 GHz
	R&S®ADD207	690 MHz to 6 GHz
	R&S®ADD307	20 MHz to 690 MHz
DF method	20 MHz to 173 MHz	Watson-Watt
	173 MHz to 6 GHz	correlative interferometer
DF accuracy ¹⁾	R&S®ADD107 (20 MHz to 1.3 GHz)	3° RMS (typ.)
	R&S®ADD107 (300 MHz to 1.3 GHz)	1° RMS (typ.)
	R&S®ADD207 (690 MHz to 6 GHz)	1° RMS (typ.)
	R&S®ADD307 (20 MHz to 559 MHz)	≤ 2° RMS, 1° RMS (typ.)
	R&S®ADD307 (550 MHz to 690 MHz)	upon request
Receive mode		
Frequency range	with separate receiving antenna	9 kHz to 7.5 GHz
Scan speed	with R&S®DDF007-PS or R&S®EM100-PS options	up to 2 GHz/s
IF spectrum display range	selectable	up to 10 MHz
Demodulation bandwidth	selectable	up to 500 kHz
Enhanced signal analysis capability	with R&S®CA100	yes
General specifications		
Lithium-ion battery pack operating time per charge	DF mode	up to 8 h
Weight	R&S®DDF007, without battery	approx. 2.7 kg (5.95 lb)
	R&S®EM100-DF	approx. 2.5 kg (5.51 lb)
	R&S®ADD107, R&S®ADD207	approx. 6 kg (13.23 lb)
	R&S®ADD307	ca. 6.6 kg (14.55 lb)
	R&S®MP007 backpack, including charging electronics, cable and battery	approx. 14 kg (30.86 lb)
Networked operation	master/slave operation	yes
Operating temperature range		0°C to +50°C
Storage temperature range		-20°C to +60°C
Power supply	AC, with external power supply unit	100 V to 240 V AC, 50/60 Hz, 1 A
	DC	20 V to 30 V DC, 4 A nominal 24 V DC
	battery pack	rechargeable lithium-ion battery BB2590 28.8 V, 8.7 Ah
Shock (40 g shock spectrum)		yes, in line with MIL-STD 810E, method no. 516.4

¹⁾ Referenced to antenna.

Ordering information

Designation	Type	Order no.
Base unit		
Portable Direction Finding System, including R&S®RAMON control software package, carrying frame, case, mast extensions, power supply and internal cabling ¹⁾	R&S®MP007	3053.9901.02
Web Based GUI for R&S®MP007 and R&S®DDF1555	R&S®RA-DFWEB	3029.8844.02

¹⁾ R&S®DDF007, R&S®ADDx07 and control PC are not part of the delivery and have to be purchased separately.

Your local Rohde&Schwarz expert will help you determine the optimum solution for your requirements.
To find your nearest Rohde&Schwarz representative, visit www.sales.rohde-schwarz.com

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, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

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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