

R&S®PR300

PORTABLE MONITORING RECEIVER

High-performance wideband monitoring and precise direction finding in handheld format



Product Brochure
Version 04.01

ROHDE & SCHWARZ
Make ideas real



AT A GLANCE

The R&S®PR300 is a portable monitoring receiver with 125 MHz real-time bandwidth, high scanning speed and a user-friendly touchscreen. It is equipped with advanced application-oriented functions for spectrum monitoring, interference hunting, signal detection and direction finding.

The R&S®PR300 is a wideband high speed monitoring and precision direction finding (DF) receiver carefully engineered. It uses cutting-edge architecture and techniques to assist increasingly challenging spectrum-related operations such as spectrum monitoring, detection, interference hunting from unintentional and malicious emitters, direction finding and geolocation. It reliably detects, analyzes and locates signals from 8 kHz to 8 GHz. The

R&S®HE400DC and R&S®HE800-DC30 handheld directional antennas with integrated downconverter extend the frequency range up to 33 GHz. DF accuracy with a deviation of less than one degree from 9 MHz to 20 GHz with R&S®ADDx07 compact DF antennas allows the operator to locate emitters with high precision. Greater than 500 GHz/s scanning speed powers super-fast detection beyond real-time bandwidth.



BENEFITS AND KEY FEATURES

- ▶ Detect, analyze and locate RF signals from 8 kHz to 8 GHz
- ▶ Extendable up to 20 GHz with the R&S®HE400DC and from 18 GHz to 33 GHz with the R&S®HE800-DC30 handheld directional antenna with downconverter
- ▶ 125 MHz real-time bandwidth for gapless detection and analysis of wideband communications signals so nothing is lost
- ▶ Super-fast panorama scanning speed of more than 500 GHz/s across the entire frequency range for near real-time detection while maintaining fine spectrum resolution
- ▶ Automatic detection and recording of up to four special non-continuous spectra simultaneously to conserve time, effort and storage
- ▶ Correlative interferometer based single-channel DF algorithm for high angle accuracy (less than 1° RMS) while supporting 125 MHz bandwidth in DF mode
- ▶ Accurate angle of arrival (AoA) based direction finding from 9 MHz to 20 GHz with compact Rohde & Schwarz DF antennas
- ▶ User-friendly, easy configuration, amplitude scaling and out-of-span check with a simple finger swipe through capacitive touch capability



TYPICAL APPLICATIONS

- ▶ Spectrum monitoring in the field
- ▶ Interference hunting
- ▶ Precision direction finding with a handheld receiver
- ▶ High speed signal detection

MASTERING THE SPECTRUM

Uncover hidden interference with real-time spectrum analysis

The electromagnetic spectrum has emerged as a vital strategic asset for regulatory bodies and government agencies. As a result, the spectrum monitoring market is expanding rapidly to meet critical needs, with high data rate applications a particularly strong demand driver for broader bandwidth. The R&S®PR300 offers superior performance, is wideband, high speed and provides enhanced usability while maintaining size, weight and power (SWaP) in a handheld form factor. It is fully equipped to handle all aspects of on-site spectrum monitoring, signal localization and interference mitigation across diverse environments. The real-time bandwidth of the R&S®PR300 allows versatile signal characterization with bandwidths up to 125 MHz, spanning 5G FR1, LTE, 3G and every signal transmitted within its wide operational range. The gapless real-time capability up to 125 MHz ensures reliable detection and comprehensive analysis of the most complex wideband signals. This technology enables detection of low-power interfering signals hidden inside larger, consciously modulated signals.

Protecting critical signals from interference

Due to the proliferation of 5G/6G, IoT devices and increasingly sophisticated unauthorized transmitters, detecting short-duration and transient signals is highly critical in spectrum monitoring. Even brief transient interference on critical navigation or communications frequencies can be life-threatening. A system unable to detect transients may completely miss interfering signals and lead to degraded network performance or fail to protect radio links or critical mission communications. With a scan speed of more than 500 GHz/s, the R&S®PR300 supports near real-time detection of agile transient signals.

Accurate signal localization for enhanced spectrum monitoring

Direction finding (DF) is a critical component of spectrum monitoring because it transforms basic signal detection into actionable intelligence by identifying the physical origin of transmissions. It is the essential first step in a multi-stage process to precisely locate emitters.



In addition to manual homing direction finding with R&S®HE400 or R&S®HE800 handheld directional antennas, the R&S®PR300 equipped with compact R&S®ADDx07 DF antennas can be expanded into a correlative interferometer based DF system. Through its handheld design, the R&S®PR300 offers high angle accuracy at less than 1° RMS and 125 MHz bandwidth in DF mode from 9 kHz to 20 GHz. A proprietary high accuracy timestamping algorithm together with the R&S®PR300-GNSS internal GNSS option enables operation of a multiple-receiver network capable of precise time difference of arrival (TDOA) radiolocation.

Segmented scanning ensures speed and precision

Segmented scanning is a pivotal strategy for balancing high-resolution signal analysis with the need for speed and resource optimization in crowded spectrum environments. Dividing a wide frequency band into smaller, focused sub-blocks or regions to optimize processing resources and detection accuracy. The R&S®PR300 supports up to four non-continuous spectrum segments. This allows operators to skip known or well-regulated bands and focus specifically to the bands of interest. With its user configurable limit lines and trigger capabilities, the R&S®PR300 offers hands-free auto detection and recording of signal events that violate set limits.

Unlimited power for uninterrupted monitoring

All-day measurement sessions in the field without access to external power are a major challenge. In remote areas where power is unavailable, the success of the entire mission depends on device runtime. With its USB-C charging interface, the R&S®PR300 offers unlimited operation time and operational efficiency in the field while maintaining SWaP.

Time domain capabilities for advanced signal analysis

The R&S®PR300 also provides time domain analysis with simultaneous signal graphical display in the frequency and time domains. This feature lets operators isolate and analyze specific parts of time-varying signals, such as 5G NR TDD based uplink and downlink signals, that would otherwise be inseparable because they overlap in the frequency domain. Thanks to gapless 125 MHz bandwidth, the R&S®PR300 uncovers hard-to-detect short duration interference signals without missing a thing.

A smooth transition to next-level spectrum analysis

The R&S®PR300 is backward compatible with all the trusted and reliable application algorithms and intuitive user interface from its predecessors such as:

- ▶ Analog demodulation
- ▶ Versatile signal measurements
- ▶ Level measurements
- ▶ Field strength measurements
- ▶ ITU-compliant modulation parameter measurements
- ▶ Time domain analysis with simultaneous signal graphical display in the frequency and time domains with extended 125 MHz bandwidth
- ▶ Super-fast spectrum scanning capabilities

Complete spectrum monitoring in a handy format

Enhanced visualization and touch operation are coupled with a wide range of markers and signal measurement functions, extensive mapping features, I/Q data streaming, a history mode, audio and trace recording as well as LAN remote control for replay and documentation. In fact, the R&S®PR300 is one of the most powerful monitoring receivers in handheld format.



TYPICAL APPLICATIONS

The R&S®PR300 is a high performance receiver and the ideal basis for modern spectrum regulation, management and related operations. The receiver is crucial for applications that demand precision, wide bandwidth, the ability to detect weak signals in environments with significant noise or interference and analysis of signals in both the spectrum and the time domain. It can be used for various applications as described below.

Spectrum monitoring in the field

Spectrum monitoring facilitates the detection and localization of unauthorized interference, ensures regulatory compliance with licensing and communications standards and optimizes network management operations. The R&S®PR300 is engineered for mobile deployment across indoor and outdoor environments. Wideband operation with gapless real-time processing up to 125 MHz enables seamless capture and analysis of signals without data loss. Diverse spectrum scan modes enhance flexibility in signal acquisition. A suite of comprehensive measurement tools includes polychrome spectrum analysis, time domain analysis, direction finding and ITU-compliant measurements for efficient field operations.

Interference hunting

Hunting interference – both unintentional and malicious – is crucial because disruptions in critical spectrum can be catastrophic and have the potential to degrade infrastructure, such as 5G networks, aviation systems, satellite communications and critical missions. The R&S®PR300 is optimized for rapid detection, analysis and pinpointing of interference in indoor and outdoor environments.

Its real-time polychrome display allows operators to visually distinguish overlapping signals at a glance. Using time domain analysis with the time-gated spectrum function, even hard-to-detect interference can be spotted reliably. Once found, interferers can be located with manual homing and direction finding, automatic AoA based direction finding or from a moving vehicle using R&S®MobileLocator software installed on a PC.

Precision direction finding with a handheld receiver

Knowing that a transmission exists by monitoring is often only half the mission. To manage, secure and optimize the radio frequency environment, it is necessary to know the spatial context – i.e. where the signal is originating from – which is why direction finding is a cornerstone of effective spectrum operations. R&S®PR300 DF capabilities let operators pinpoint the exact location of signals disrupting the critical communications link or operation right in the field.

High speed signal detection

Modern warfare is defined by the speed of the decision cycle, and detecting agile communications signals is crucial to effective operations. On the other hand, modern digital radios use frequency hopping thousands of times per second. Low probability of intercept (LPI) transmitters switch waveforms very quickly. To gain superiority and sometimes to ensure survival, drones change their data links and communicate in burst mode. The R&S®PR300 scan speed of more than 500 GHz/s enables users to outmaneuver emitters using these techniques.

Further applications

The R&S®PR300 is a powerful instrument for further applications that require flexibility and mobility with a high degree of precision. Whether performing on-site signal measurements in the frequency and time domains to ensure proper network performance, carrying out online signal analysis in combination with PC-based signal analysis software in communications intelligence (COMINT) applications or detecting and locating miniature transmitters indoors with a differential spectrum, the R&S®PR300 is a powerful yet compact, battery operated and easy-to-use solution.



BEST-IN-CLASS MONITORING SOLUTION WITH SUPER-FAST SCAN

Wide frequency range

The R&S®PR300 with 125 MHz real-time bandwidth covers a monitoring frequency range from 8 kHz to 8 GHz. It can be extended up to 20 GHz with the R&S®HE400DC handheld directional antenna with downconverter, and up to 33 GHz with the R&S®HE800-DC30 handheld directional antenna with downconverter. The integrated downconverter is completely controlled by the R&S®PR300.

Robust acquisition in high-interference environments

The R&S®PR300 is engineered for wideband antenna systems, featuring robust preselection circuitry to mitigate signal overload and shield against strong out-of-band interfering signals. The 40 dB attenuator with 1 dB step resolution and a manual or automatic setting option provides balanced overload protection and signal clarity. The automatic insertion of attenuation helps alleviate overload conditions in the receiver, which is essential when operating the instrument in unknown, dynamic or changing signal environments. With selectable gain profiles, the R&S®PR300 achieves the noise figure necessary for reliable low-level signal detection.

Seamless and streamlined spectrum surveillance

The R&S®PR300 delivers instant spectral awareness through a high-resolution, synchronized spectrum and waterfall interface. Three configurable spectrum traces and selectable resolution bandwidths ensure comprehensive signal visibility. Simplify complex spectra using markers and integrated trace mathematics to facilitate rapid, high-precision spectral analysis.

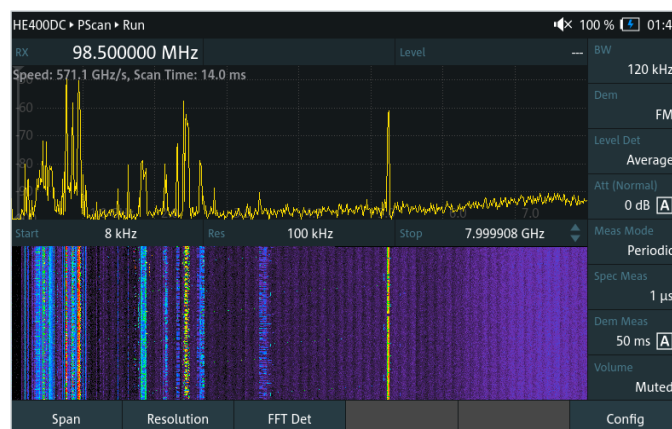
Accelerated spectral profiling through dedicated scanning architectures

Performing comprehensive spectral searches or monitoring established links, the R&S®PR300 provides the specialized scanning agility necessary for successful missions. The R&S®PR300-PS panorama scan option optimizes wide-span surveillance, offering user-definable resolution steps and high scanning speeds of more than 500 GHz/s. Frequency scan (FSCAN) mode executes high speed sweeps with equal frequency spacing at over 5000 channels/s and memory scan (MSCAN) mode supports sweeping through preconfigured discrete frequency lists at 2000 channels/s. Optimize your intercept workflow using granular squelch and dwell control to reliably isolate and listen to active channel traffic.

125 MHz real-time bandwidth with an adjustable demodulation bandwidth and up to three configurable spectrum traces.



Super-fast spectral scan (panorama scan) with waterfall display across wide frequency ranges.



SIMULTANEOUS SPECTRUM AND DEMODULATION ARCHITECTURE

Dual-wideband DDC paths for individual tasks

The R&S®PR300 comes with a dual-wideband digital downconverter (DDC) with up to 125 MHz bandwidth each. By decoupling high speed spectral acquisition from precision demodulation, the system achieves rapid detection without compromising measurement accuracy. Leveraging advanced digital signal processing, the R&S®PR300 executes parallel tasks – including spectral measurement and real-time demodulation – without performance trade-offs.

Concurrent spectrum visualization during demodulation and signal analysis

Traditional architectures are often subject to spectral blindness, and the panoramic spectrum display is sacrificed during active signal demodulation or content extraction. The loss of wide-span awareness during monitoring is a common bottleneck. The dual digital receive paths of the R&S®PR300 allow placement of a narrowband demodulation channel anywhere within the real-time bandwidth while maintaining a wideband overview of the spectrum in real time. This architecture eliminates the spectrum awareness gap that occurs during content extraction and parameter measurement and dramatically reduces reaction time to emerging high-priority spectral events.

Detection and monitoring in gapless real-time

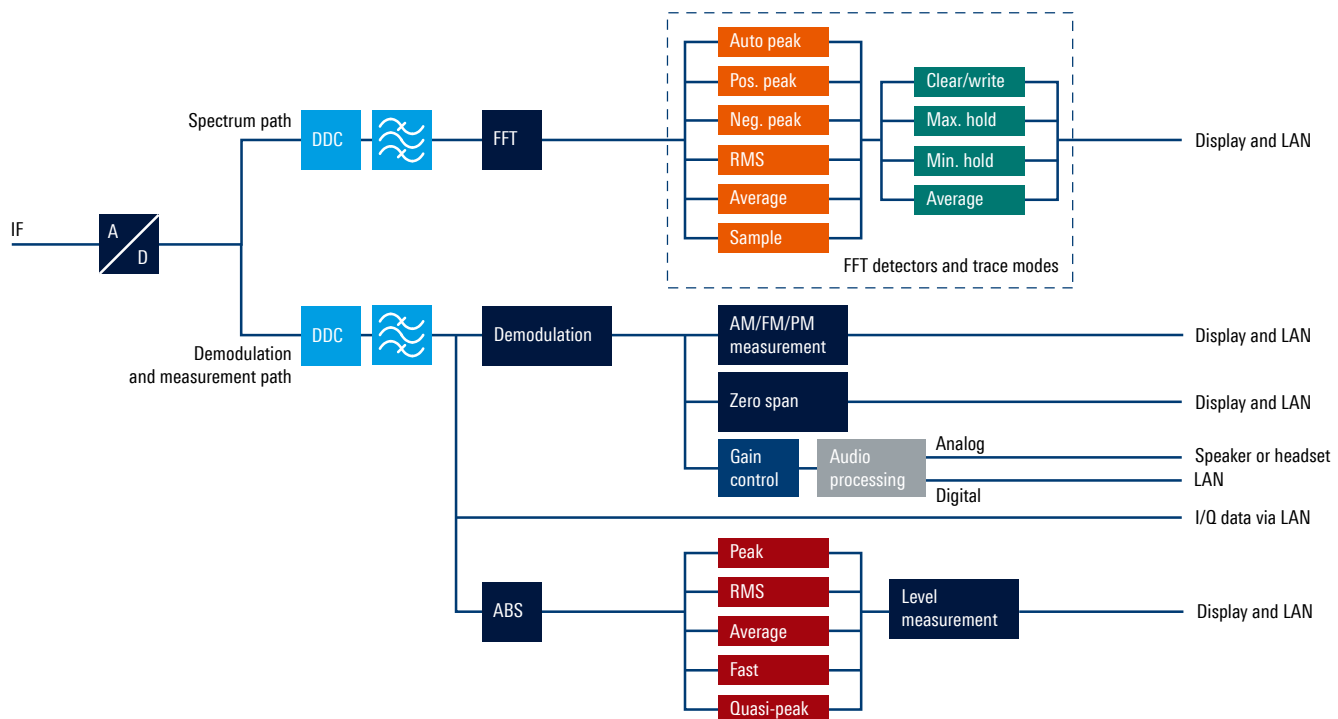
The R&S®PR300 offers real-time operation over 125 MHz bandwidth for the spectrum display while running signal processing at up to 4 million FFT/s with 50% overlap. Through direct sampling and a dual-downconversion architecture, the R&S®PR300 overcomes the bandwidth constraints inherent to instantaneous superheterodyne receivers across the HF and VHF spectra.

The R&S®PR300 can detect signals as brief as 750 ns with 100% probability of intercept (POI) while maintaining full amplitude accuracy. Users can tailor signal discovery using various FFT detectors and trace modes designed to pinpoint specific signals in transmissions. The waterfall display with its built-in history buffer and time resolution of up to 10 μ s per line makes it possible to analyze short-duration signals with high granularity.

Parametric measurement and waveform demodulation

Parametric measurement and waveform demodulation features enable analog demodulation (AM/FM/PM) for high-quality audio monitoring with optional time-domain analysis and modulation tools to export a seamless I/Q stream to your PC for specialized digital analysis.

Simplified diagram of digital signal processing in the R&S®PR300 portable monitoring receiver



MANUAL DIRECTION FINDING

Last-mile direction finding

Long-range triangulation can get you into the right vicinity, but last-mile DF is critical to locating a signal source. DF in last-mile operations is crucial to overcoming an urban multipath environment, precise emitter localization and interference hunting. Connect the R&S®PR300 with R&S®HE400 handheld directional antennas and move physically around obstacles to identify the line of sight (LOS) signal in indoor and outdoor environments. Interference hunting can be expanded up to 20 GHz with the R&S®HE400DC and up to 33 GHz with the R&S®HE800-DC30 handheld directional antennas with downconverter. An integrated audio indicator generates a variable pitch or pulsed tone corresponding to signal strength, providing real-time acoustic feedback through the loudspeaker or headset to streamline the homing process.

DF using triangulation

The R&S®PR300-MAP option provides integrated mapping to streamline signal geolocation. By correlating multiple DF bearings with internal GNSS data, the system automatically triangulates the interferer's precise coordinates. An integrated spectrum display within the mapping interface allows for simultaneous signal tracking and geographic localization. The R&S®PR300-MAP option supports OpenStreetMap data format. Users can download maps to deploy them to the receiver via SD card, USB storage or a remote-access drive.

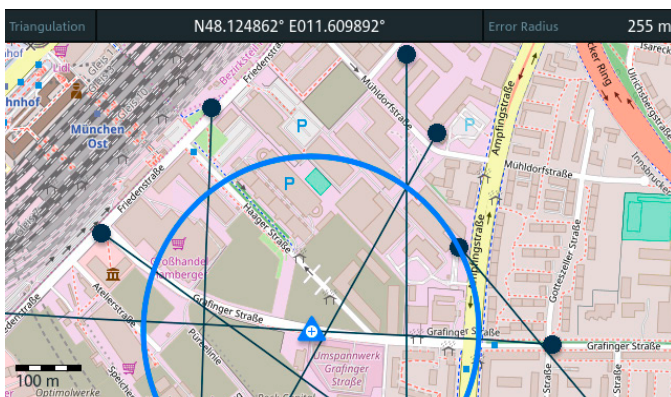
Horizontal scan

The horizontal scan (HSCAN) function included in the R&S®PR300-MAP option plots the level of the received signal via the directional antenna on a polar diagram with an intuitive graphic display of the azimuth. This eliminates the need for the expertise to translate a linear graph (like a standard spectrum analyzer) into a line of bearing.

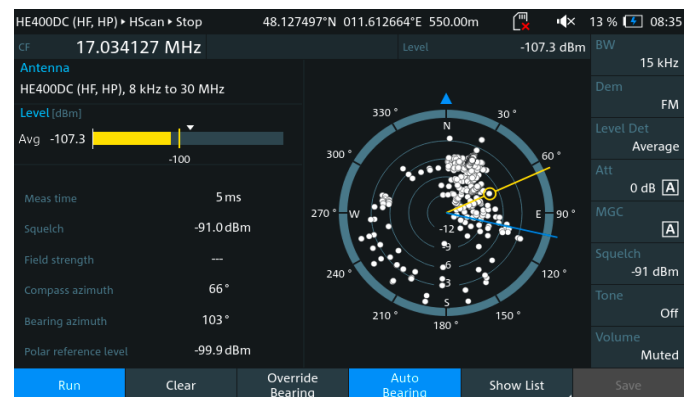


R&S®PR300 and R&S®HE800-DC30 handheld directional antenna with downconverter.

Triangulation based on multiple DF results recorded at several locations.



Horizontal scan plot on a polar diagram visualizes the direction of the incoming signal.



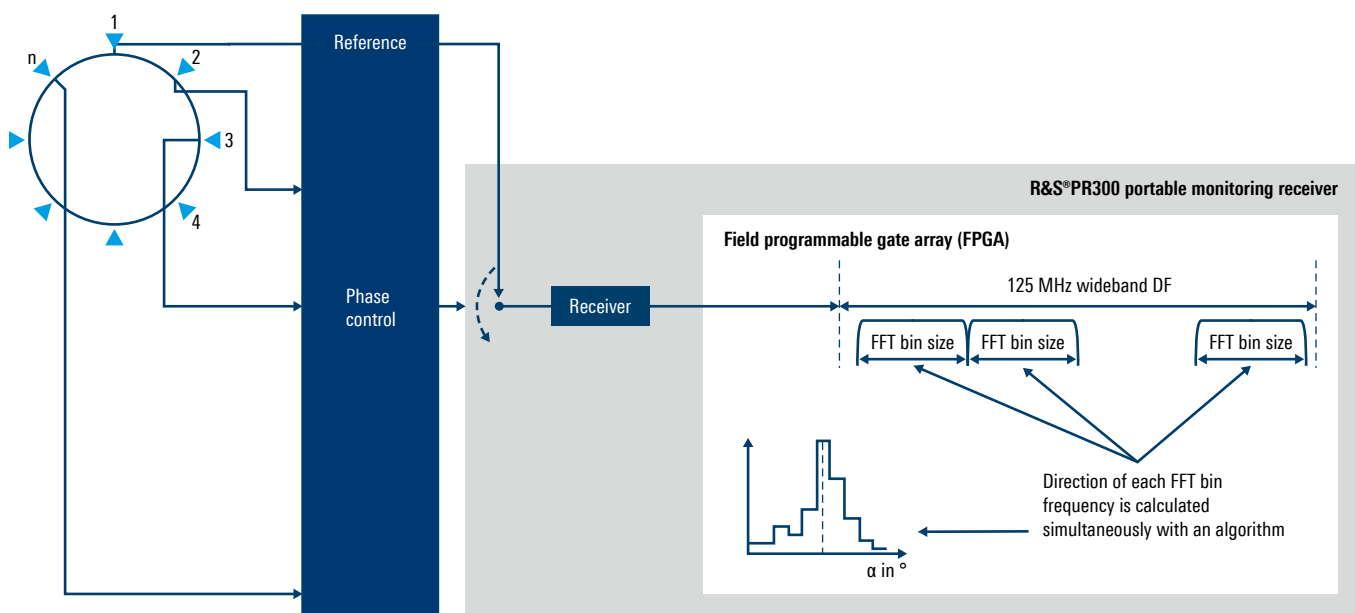
AUTOMATIC DIRECTION FINDING AND RADIOLOCATION

Precision AoA direction finding

Direction finding (DF) is essential to modern spectrum operations because, in a hyper-congested RF environment, mere knowledge of a signal is inadequate. Locating the signal is crucial to various spectrum related operations such as interference mitigation, regulatory enforcement, electromagnetic warfare (EW), signal intelligence (SIGINT), security and counter UAS systems. The R&S®PR300-DF option in combination with R&S®ADDx07 DF antennas can perform angle of arrival (AoA) direction finding from

9 MHz to 20 GHz. Fast and highly accurate DF results for a selected signal within the real-time bandwidth are displayed in a polar diagram. In accordance with the antenna's spectral coverage and selected DF parameters, the R&S®PR300-DF option offers a typical DF system accuracy of 1° (RMS) thanks to the correlative interferometer method. Suitable for both transportable and vehicle-integrated configurations, the system effectively locates practically any interference source, irrespective of its bandwidth or modulation characteristics.

Precision correlative interferometer direction finding techniques using the R&S®PR300 portable monitoring receiver

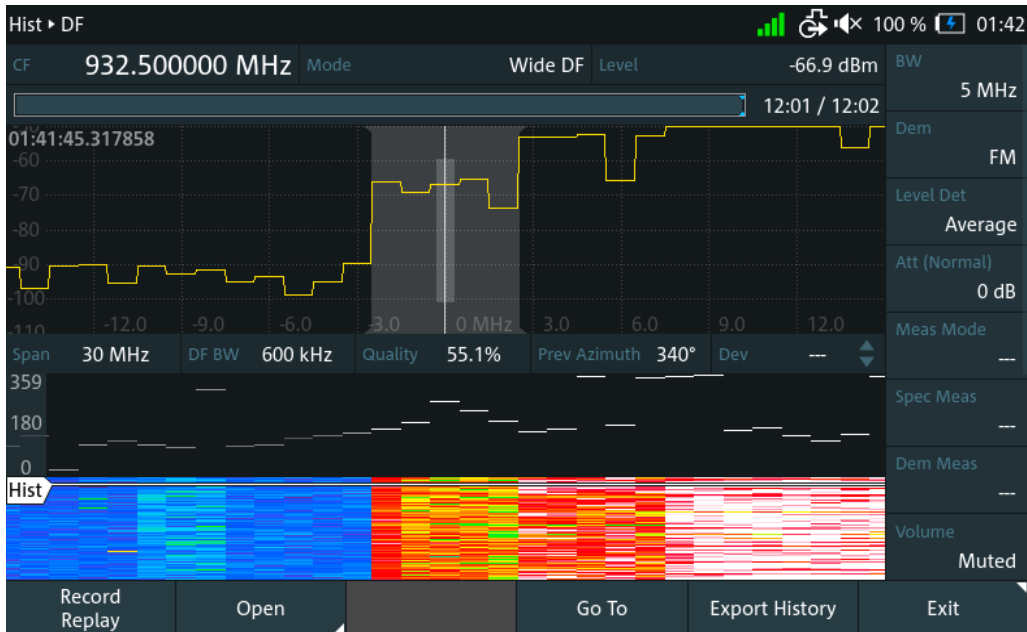


Wide bandwidth direction finding

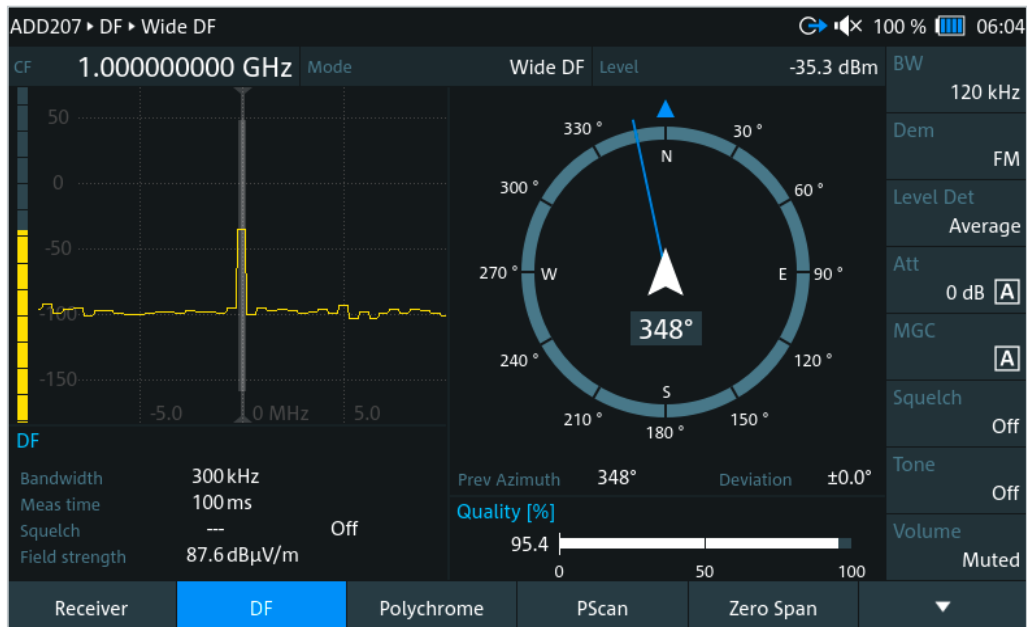
Modern communications systems increasingly use techniques that are difficult to track with narrowband equipment. The R&S®PR300-DF direction finding option enables wideband direction finding with up to 125 MHz real-time bandwidth. Wider bandwidths directly translate to finer granularity. Simultaneous DF results for all signals within the real-time bandwidth can be displayed in an azimuth versus frequency diagram. Changes in azimuth of moving transmitters can be tracked over time via a color-coded DF waterfall display.

Triangulation of intermittent interferers

To locate transient or intermittent interferers or public mobile radio emissions, multiple transportable R&S®PR300 stations can be networked across various sites to perform triangulated geolocation. The compact DF antennas are mounted on lightweight tripods and installed temporarily at these exposed sites, such as the rooftops of tall buildings. Triangulation can be performed using a single portable receiver and a directional antenna with multiple DF measurements. This solution provides a map visualization that is simple and intuitive for operators to interpret, while at the same time keeping costs relatively low through the use of a handheld device.



Multi-frequencies direction finding using wideband direction-finding mode of the R&S®PR300-DF option.



Polar DF display for AoA direction finding with the R&S®PR300-DF option.

SIGNAL CHARACTERIZATION

Level and field strength measurements

Field strength measurements are important to ensure that radio systems are operating properly within the limits of regulatory requirements and to verify network coverage. This is also an important aspect of regulatory and legal compliance. The R&S®PR300-FS field strength measurement option paired with R&S®HE400 handheld antennas performs field strength measurements in line with ITU-R SM.378-7 for various enforcement tasks. The connected R&S®HE400xx antenna module is automatically recognized, and the antenna factors stored in the R&S®PR300 are applied to convert the received signal level to field strength. This feature supports simultaneous level measurements of up to three detectors with peak indicators.

The results of up to three level detectors, along with their field strength measurements, can be displayed simultaneously.

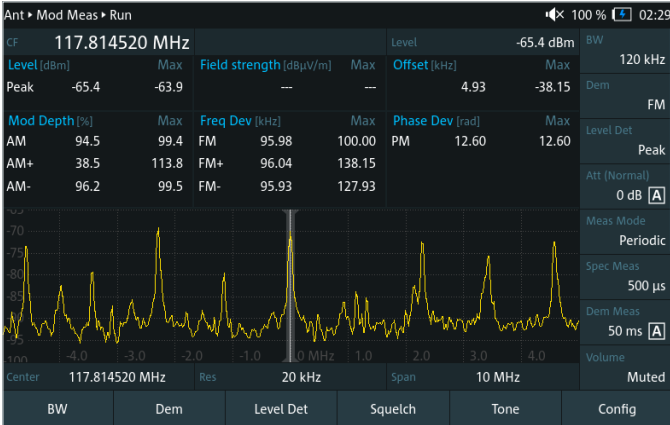


Analog modulation measurements

Although digital modulation is popular, analog modulation systems are still used because they offer good range, latency, safety, resilience and low cost. The R&S®PR300-MM modulation measurement option enables RDS decoding and simultaneous measurement of the modulation parameters for AM, FM and PM modulated signals in line with the ITU Handbook on Spectrum Monitoring. The modulation depth, frequency deviation and phase deviation can be determined concurrently. The 125 MHz wideband receiving capability of the R&S®PR300 can provide high fidelity sampled signals for further online or offline analysis. Digitally modulated signals can be analyzed, classified and demodulated with R&S®CA100 multi-channel signal analysis software ¹⁾ or R&S®CA120 PC-based signal analysis and signal processing software ²⁾, which also enables manual parameter measurements in line with ITU-R SM.1600.

¹⁾ See R&S®CA100 product brochure (PD 3606.9340.12).
²⁾ See R&S®CA120 product brochure (PD 3606.9327.12).

ITU-compliant measurements of AM depth, FM deviation and PM deviation in a single view.



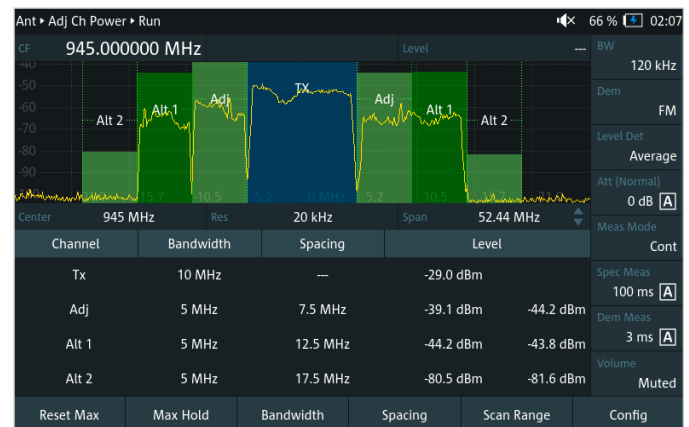
Composite waveform discrimination

Unlike traditional displays that only show the most recent or highest power level, the R&S®PR300-PC polychrome spectrum option uses persistence mapping with color-coding to show how often a signal occurs. This makes it possible to “see through” dominant signals and identify infrequent or overlapping pulses that would otherwise be hidden. To identify pulsed interference within a complex signal environment, signal frequency is color-coded by its rate of occurrence. The waterfall display complements this by tracking signal fluctuations over time, providing a third dimension for characterization.

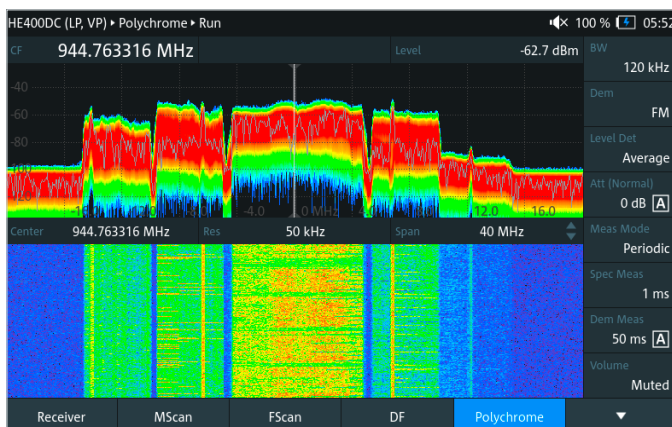
Bandwidth, channel power and adjacent channel power measurements

Bandwidth and channel power are the two primary resources that determine a communications system’s performance. Bandwidth determines the system’s information capacity while channel power provides signal quality and reliability. The adjacent channel power (ACP) limit is crucial for interference prevention, compliance and transmitter performance diagnostics. ACP measurements ensure that wireless transmitters operate efficiently and legally. The R&S®PR300-SPM spectral measurement option measures occupied bandwidth, frequency offset, channel power and adjacent channel power (ACP). When paired with the R&S®PR300-PS panorama scan option, users can measure signals wider than 125 MHz in a panorama scan. Bandwidth measurements with the R&S®PR300-SPM option are in line with ITU-R SM.328-11, ITU-R SM.443-4 and the ITU Handbook on Spectrum Monitoring, chapter 4.5.

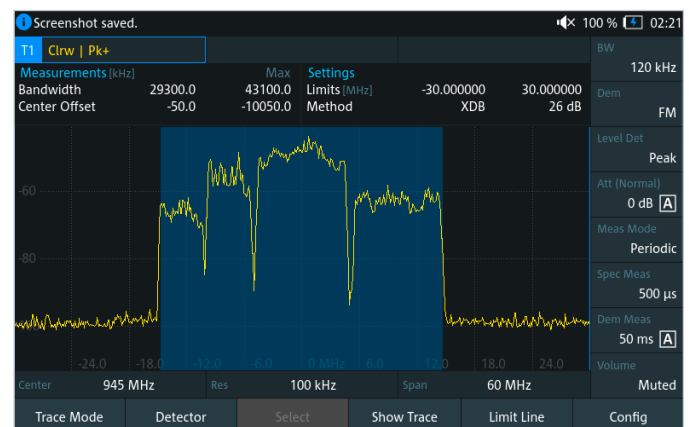
Adjacent channel power measurement of a cellular signal.



Polychrome spectrum uses color coding to indicate relative level occupancy over time.



Automatic occupied bandwidth measurement of a 4G signal (B% method).



TRACE HISTORY, RECORDING AND REPLAY

Trace history in buffer

If an intermittent interferer appears briefly and vanishes, history mode allows you to scroll back in time to capture, review and analyze the spectrum. Users can look for apparent patterns and conduct correlation analysis of an intermittent signal. The R&S®PR300 history memory buffer can store hours of recordings and has a time resolution of up to 10 μ s per line in the waterfall display. For further processing, the history buffer can be exported to the internal memory, a USB flash drive or an SD card.

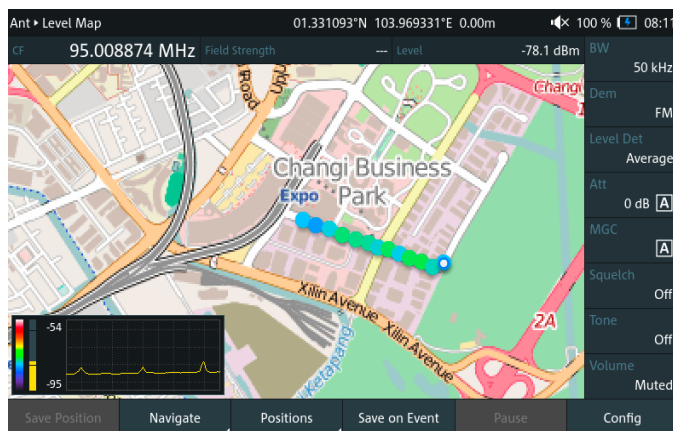
Recording and replay

One of the biggest challenges in spectrum monitoring is the interferer that disappears the moment the user looks at the screen. The R&S®PR300-IR trace recording and replay option allows users to rewind recorded traces with demodulated audio and geolocation and zoom in on a specific time span to analyze their behavior. This feature can be used for post-mission offline analysis and forensic spectrum investigations. Recorded traces can be replayed on the device or on a PC with the R&S®PR300 GUI. Recorded information can be saved internally or on a USB flash drive or SD card. It is particularly useful in remote or mobile spectrum monitoring operations to ensure every detail is recorded and documented. Recorded field data from mobile missions can be visualized geographically on a map with the R&S®PR300-MAP mapping and geotagging application option.

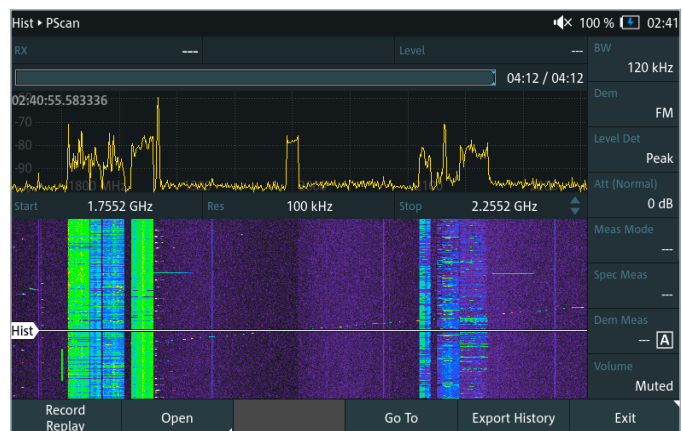
Precision timestamps

Because time is a fundamental parameter of reference for receiver operation, precision timestamp accuracy is preferred for geolocation, positioning, synchronization and data correlation. The R&S®PR300-GNSS option provides a timestamp accuracy for measured I/Q data with an RMS error of less than 50 ns. This corresponds to less than 15 m of spatial resolution. With this high precision timestamp capability, multiple R&S®PR300 can be operated as a network of sensors for accurate TDOA radiolocation. The R&S®PR300-GNSS option supports third-party navigation equipment such as gyro compasses and external GPS receivers (in line with NMEA 0183) via the SMA connector on the right side of the device.

Coverage measurements via level mapping with integrated spectrum view.



A missed signal event during the panorama scan is revisited using history mode.



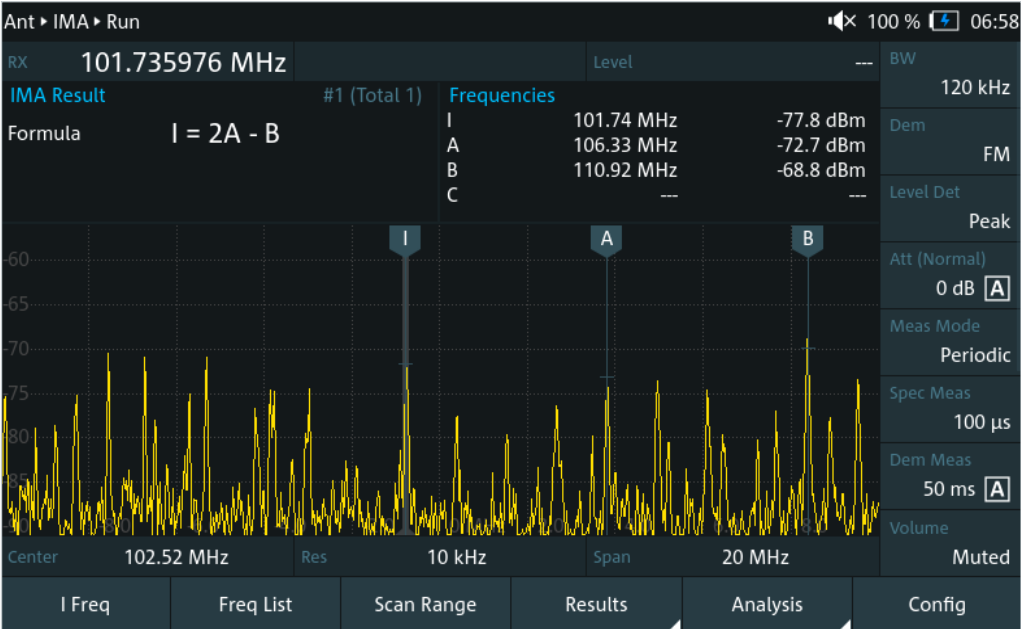
Coverage mapping and geotagging

Coverage mapping and geotagging are essential to pinpointing the received signal strength indicator (RSSI) on geographical coordinates. These measurements are essential when validating network design, infrastructure optimization, interference hunting and verifying regulatory compliance. In addition to map display and triangulation, the R&S®PR300-MAP option enables easy signal level mapping over geographical coordinates. The system logs both signal strength and GNSS coordinates simultaneously during mobile operations. Users can either capture data manually by saving events or set R&S®PR300-MAP to record automatically based on time or distance intervals. The received signals are displayed as a color-coded trail of the route on the map, where each color corresponds to a different signal strength level. Spectral view window is also maintained on the map for ease of monitoring.

Automatic interference analysis

Interference can be unintentional or malicious. Interference is often caused by spurious emissions such as harmonics and intermodulation distortions originating from imperfect active components such as amplifiers or malfunctioning electronic devices. Automatic intermodulation detection is provided by the R&S®PR300-IA interference analysis option, which allows operators to prevent false positives from intermodulation products or system-generated distortion during interference hunting. The algorithm automatically tracks harmonics and intermodulation using trigonometric analysis of a list of input frequencies, which can either be imported or generated. Audio comparison helps pinpoint the signals causing the distortion. All results can be exported for analysis and reporting.

An interference signal can be automatically identified as a harmonic or a product of intermodulation.



ADVANCED TIME DOMAIN ANALYSIS

Dual-domain analysis

The time domain shows when an event happens but masks its spectral impact. The frequency domain shows what interference is present but hides the timing and duration. Correlating transient events directly with spectral anomalies in real time bridges the gap to ensure signal integrity, diagnose transient faults and maximize receiver uptime. The R&S®PR300-ZS time domain measurement option enables simultaneous signal representation in the time and frequency domain with up to 125 MHz real-time bandwidth.

Various trigger and measurement functions let the time-dependent behavior of pulsed or burst signals be evaluated while accounting for the spectrum, which is especially useful when analyzing the transmission modes or time slot occupancy in time division duplex (TDD) networks such as 5G-TDD and LTE-TDD or time division multiple access (TDMA) networks such as TETRA, GSM and DECT. The R&S®PR300 is ideal for a large variety of performance and compliance measurements.

Time-gated spectrum measurements

Time-gated spectrum measurements can be used to analyze the signal frequency spectrum during a highly specific slice of time. Time gates isolate uplinks and downlinks where they share the exact same frequency in TDD networks. Standard spectrum analysis blends both signals, making it impossible to see where a signal is coming from. The dual DDC architecture of the R&S®PR300 with advanced gating function displays the frequency and time domain simultaneously and enables real-time spectrum measurements within a freely chosen gate in the time domain.

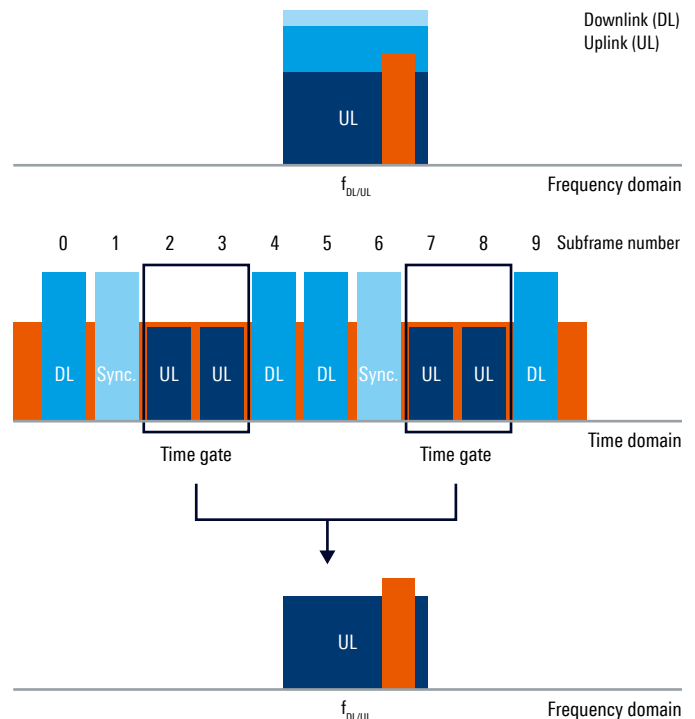
Hard to detect stationery and dynamic interference signals can be discovered and investigated once a time gate is matched either to low occupancy time slots, such as the

uplink slot, or to the guard interval between crowded downlink and uplink slots. Manual homing direction finding afterwards can pinpoint the interference source.

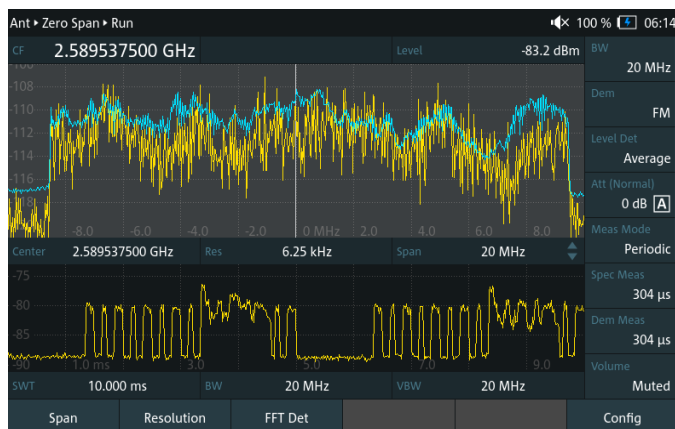
Interference hunting in TDD networks

The interference signal in the graphic below (orange) can be isolated in the spectrum by matching the time gate to the uplink time slot in time-gated spectrum measurements. Additional gated level measurements for tone function, horizontal scan and level mapping make the R&S®PR300 the ideal for effective interference hunting in TDD and TDMA networks.

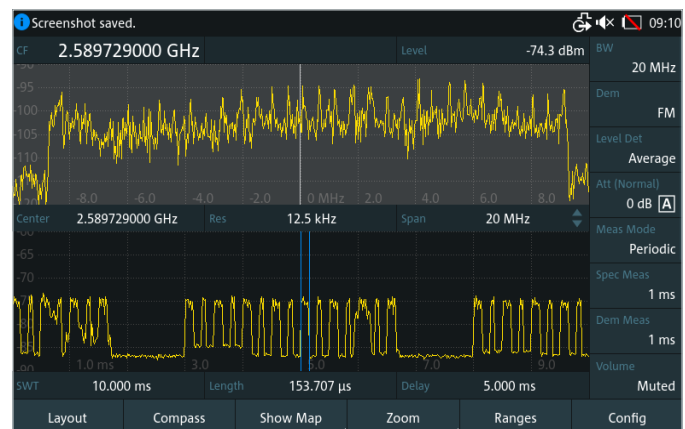
Time-gated spectrum measurements in the frequency and time domain



Simultaneous display of the frequency domain (top) and the time domain (bottom).

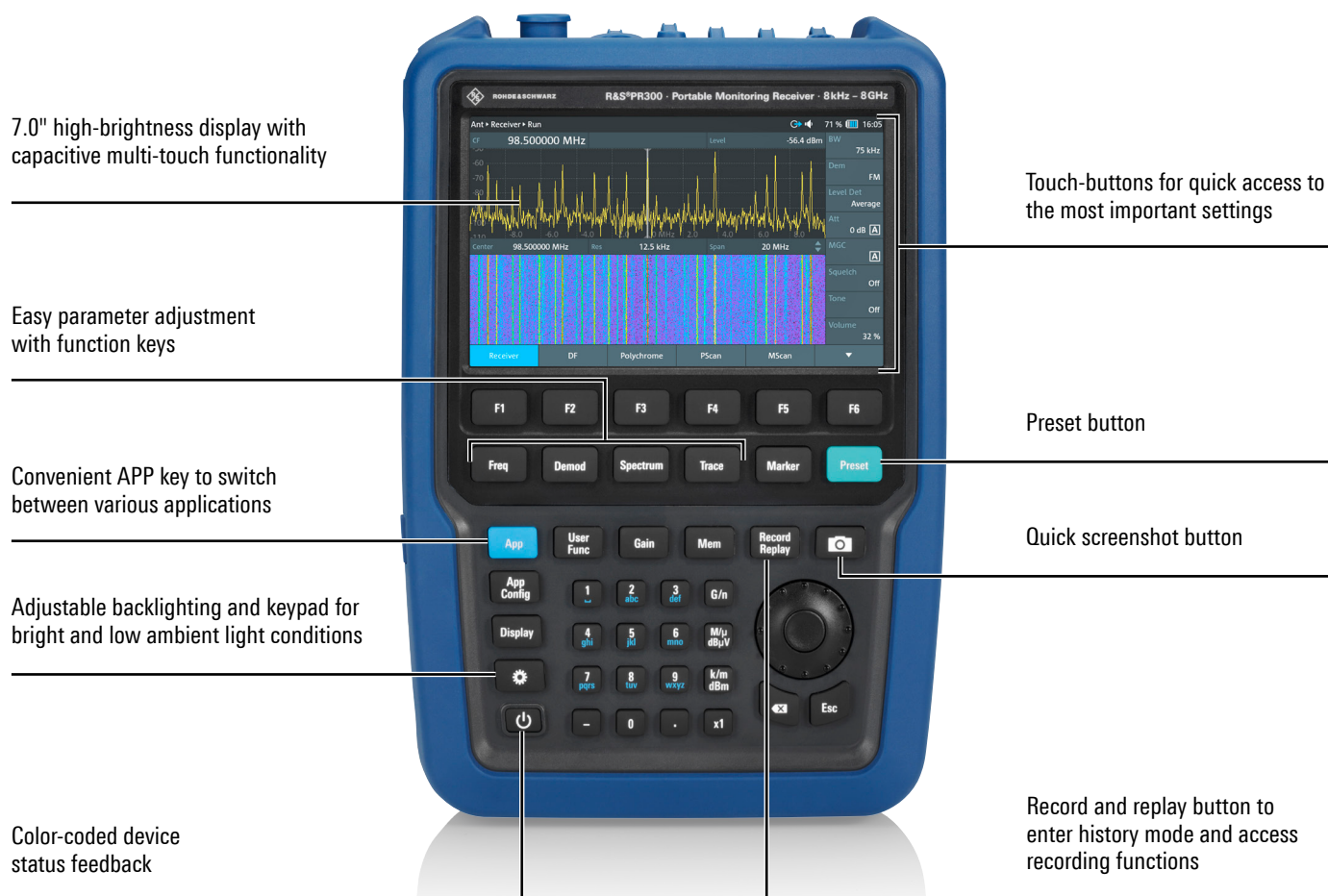


The real-time spectrum is computed from the adjustable time gate.



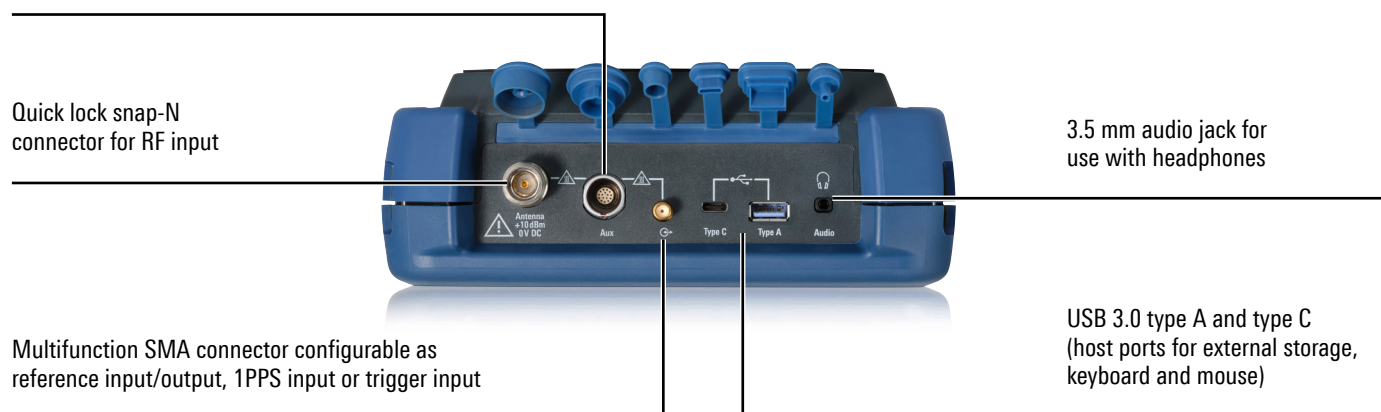
R&S®PR300 OPERATING ELEMENTS

FRONT PANEL



TOP PANEL

Auxiliary port for control signals and power for DF and handheld antennas



REAR PANEL



SIDE PANELS

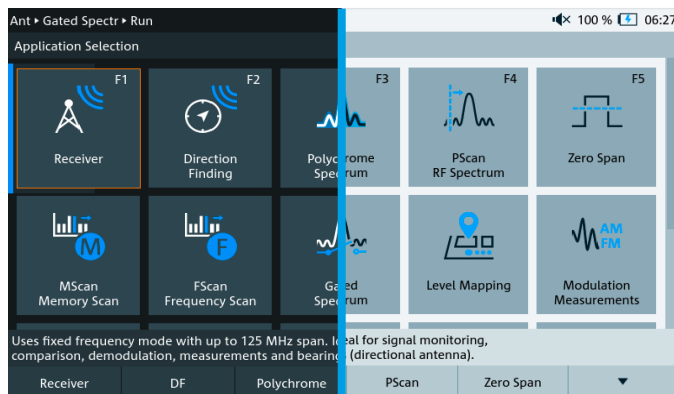
Right side



Left side



DESIGNED FOR USE IN THE FIELD



Application cockpit for convenient, fast and easy navigation between various functions (left: high color contrast).

Easy to use, rugged and handy

- ▶ Intuitive, application-oriented operation
- ▶ Enhanced color schemes for operation in bright and low ambient light conditions
- ▶ High frequency accuracy, accurate position and timestamps with built-in GNSS
- ▶ Weighs approx. 3.4 kg (7.5 lb), including battery
- ▶ Up to 3 h on a single battery charge; compartment for easy battery replacement
- ▶ Dialog boxes with guidance for compass calibration
- ▶ Built-in self-test for troubleshooting and maintenance
- ▶ Tested in line with MIL-PRF-28800F class 2 environmental standard; suitable for outdoor and rugged use
- ▶ Quick disconnect and use with Rohde&Schwarz handheld antennas and compact DF antennas
- ▶ Wide range of setup and transport accessories, e.g. for homing (on foot), tripod (stationary) and mobile (on the move) applications



Automatic direction finding with Rohde&Schwarz compact DF antennas on a magnet mount (requires R&S®PR300-DF option).



Fold-out stand for desktop use

ACCESSORIES



R&S®HA-Z422 rain holster with strap



R&S®HA-Z406 battery

ORDERING INFORMATION

Designation	Type	Order No.
Base unit (including accessories, such as power cable and manual)		
Portable monitoring receiver	R&S®PR300	4502.8896.02
Software options		
Panorama scan	R&S®PR300-PS	4502.8950.02
Polychrome spectrum	R&S®PR300-PC	4502.8967.02
Field strength measurement	R&S®PR300-FS	4502.8973.02
Modulation measurement	R&S®PR300-MM	4502.9057.02
Trace recording and replay	R&S®PR300-IR	4502.9040.02
Direction finding upgrade	R&S®PR300-DF	4502.8996.02
Mapping and geotagging application	R&S®PR300-MAP	4502.8980.02
Spectral measurement	R&S®PR300-SPM	4502.9063.02
Internal GNSS	R&S®PR300-GNSS	4502.9086.02
Interference analysis	R&S®PR300-IA	4502.9011.02
Video spectrum and frequency counter	R&S®PR300-VSF	4502.9092.02
Time domain measurement	R&S®PR300-ZS	4502.9028.02
Documentation		
Documentation of calibration values	R&S®PR300-DCV-8	4502.9070.02
Accessories		
Cable sets for direction finding (DF)		
DF cable set, for R&S®ADD107, R&S®ADD207(P), R&S®ADD307 DF antennas, with angled connector, length: 5 m	R&S®CS-ZAD5M	4500.5090.00
DF cable set, for Rohde & Schwarz compact DF antennas, with straight connector, length: 5 m	R&S®CS-ZAD5T	4500.5077.00
DF cable set, for R&S®ADD507 compact VHF/UHF DF antenna, with angled connector, length: 5 m	R&S®PR300-ZD5M	4502.8880.02
Navigational aids		
Active GNSS antenna	R&S®CS-ZNAV	4500.7440.00
Power supplies		
Lithium-ion spare battery pack	R&S®HA-Z406	5603.4085.02
Battery charger, for R&S®HA-Z406 lithium-ion spare battery pack	R&S®HA-Z403	1321.1486.02
Transport cases and bags		
Carrying holster, including chest harness and rain cover	R&S®HA-Z422	5603.4110.02
Suitcase kit, for R&S®PR300 hard-shell transit case with headphones, telescopic antenna and storage space for R&S®PR300 and mains adapter	R&S®PR100SC	4071.9258.02
Handheld directional antennas and accessories		
For detailed information see Handheld directional antennas product brochure (PD 3606.9140.12)		
Compact DF antennas		
The R&S®PR300 is compatible with the R&S®ADD107, R&S®ADD207, R&S®ADD207P, R&S®ADD307 and R&S®ADD507 compact DF antennas.		

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	SERVICE PLANS	ON DEMAND
Calibration	Up to five years ¹⁾	Pay per calibration
Warranty and repair	Up to five years ¹⁾	Standard price repair

¹⁾ For extended periods, contact your Rohde & Schwarz sales office.

Instrument management made easy

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The Rohde & Schwarz network in over 70 countries ensures optimum on-site support by highly qualified experts.

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- ▶ Technical startup/application development/integration
- ▶ Training
- ▶ Operation/calibration/repair



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- ▶ Local and personalized
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- ▶ Long-term dependability



Rohde & Schwarz

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks & cybersecurity. Founded more than 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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- ▶ Longevity and optimized total cost of ownership

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ISO 9001

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ISO 14001

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