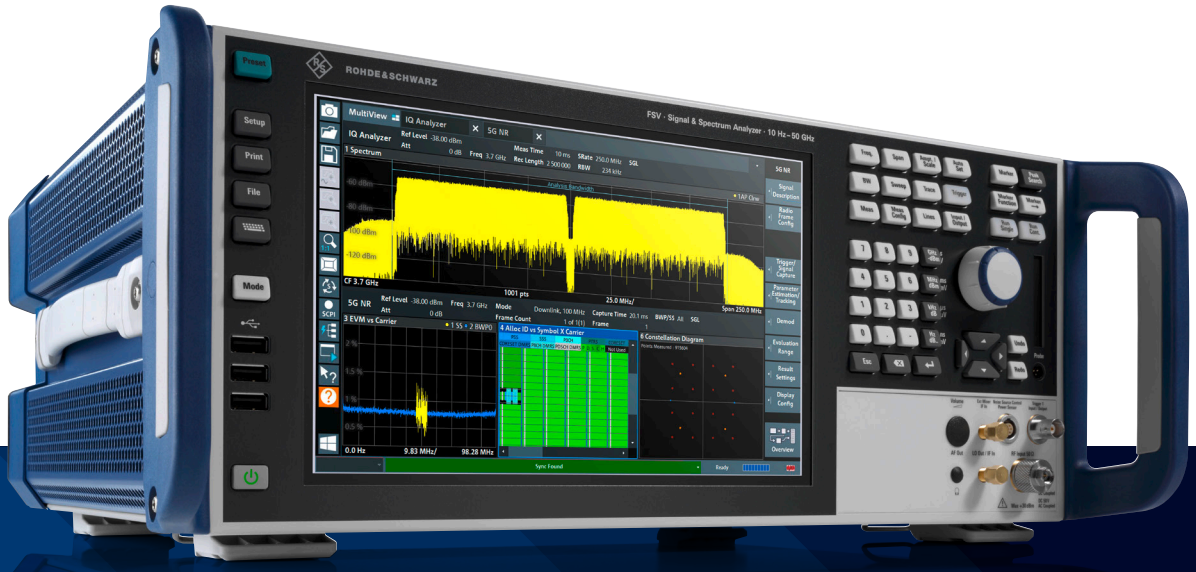
R&S®FSV3000 SIGNAL AND SPECTRUM ANALYZER

Fast setup and fast measurements



Product Brochure
Version 10.00

ROHDE&SCHWARZ
Make ideas real

AT A GLANCE

Measurements at the push of a button, capturing rare events with event based actions, and simple script programming with the SCPI recorder – setting up and performing complex measurements in no time is the strength of the R&S®FSV3000 signal and spectrum analyzer. Its fast measurement speed is a major asset especially in automated production applications as it yields high throughput.

The R&S®FSV3000 offers functions that make the configuration of complex measurements fast and easy. Setting up RF parameters with touchscreen gestures is as easy as using your smartphone. The autoset feature automatically sets key parameters such as frequency, level and gating. An SCPI recorder, which translates manual operation into remote control command scripts, considerably speeds up script programming. And event based actions support you when debugging your DUT by capturing and documenting rare events.

The R&S®FSV3000 has been designed for high measurement speed. This is a major advantage especially in production environments, which benefit from fast measurement times for spectral measurements, high-speed signal demodulation and rapid switching between different measurement modes.

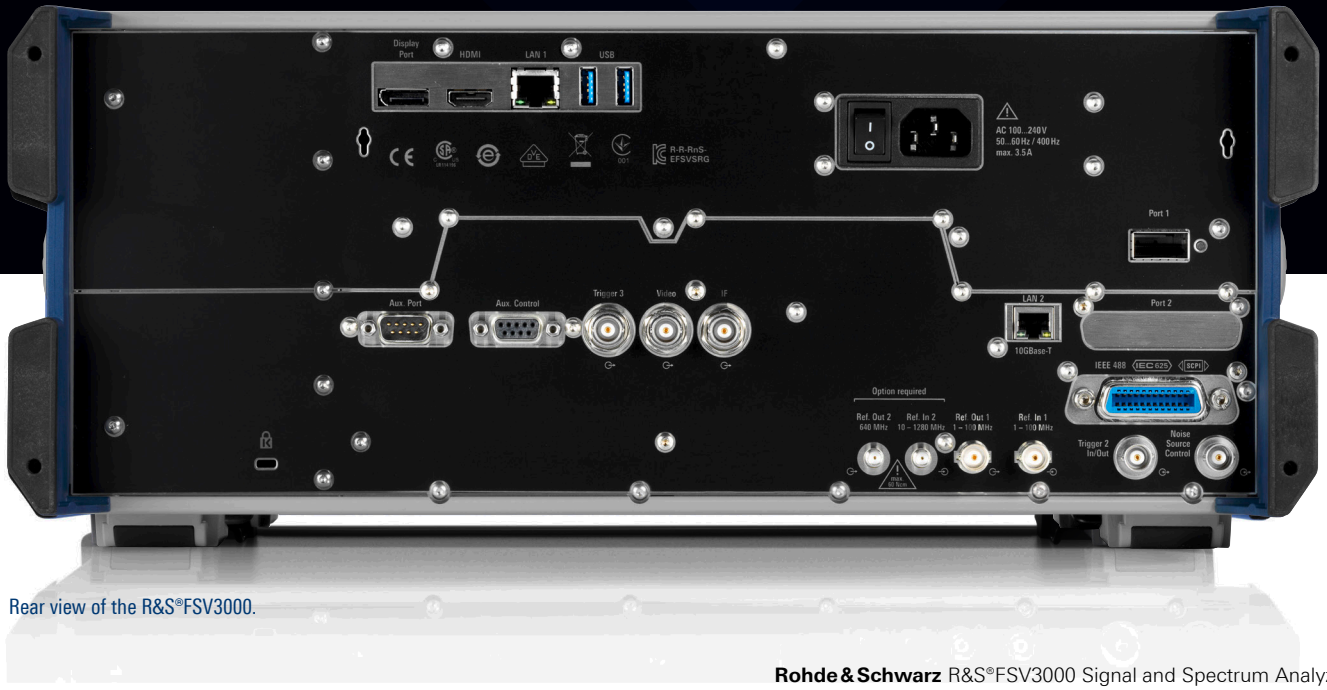
The R&S®FSV3000 provides digital modulation analysis up to 200 MHz analysis bandwidth for cellular and wireless standards, including 5G NR.

Front view of the R&S®FSV3000.

KEY FACTS

- ▶ Frequency range from 10 Hz to 4 GHz/7.5 GHz/13.6 GHz/ 30 GHz/44 GHz/50 GHz
- ▶ Frequency range extension with external harmonic mixers from Rohde&Schwarz up to 325 GHz
- ▶ Frequency range extension up to 50 GHz for best performance signal analysis with external frontends from Rohde&Schwarz
- ▶ Analysis bandwidth up to 200 MHz
- ▶ SSB phase noise at 10 kHz offset (1 GHz): < –114 dBc (1 Hz)
- ▶ Third-order intercept (TOI) at 1 GHz: +18 dBm (typ.)
- ▶ DANL at 1 GHz: –151 dBm
- ▶ DANL at 1 GHz with optional preamplifier: –165 dBm
- ▶ Ready for cloud based testing
- ▶ 10 Gbit/s LAN interface (option)
- ▶ User interface with multitouch display, SCPI recorder and event based actions
- ▶ Measurement applications for analog and digital signal analysis, including 5G NR

BENEFITS



Rear view of the R&S®FSV3000.

ADVANCED USER INTERFACE

Depending on the application, certain settings need to be made on the signal and spectrum analyzer. For simple spectral measurements, this can be just a few parameters. In the case of complex automated conformance tests, lengthy programming may be required. Whatever the objective, the R&S®FSV3000 excels with fast access to measurement results thanks to its simple and fast setup.

Multitouch display

Basic RF measurements typically require the center frequency, span, level and probably the resolution bandwidth to be configured. Finding the ideal settings can be tricky when measuring an unknown signal. The R&S®FSV3000 features a multitouch display and intuitive menu structure for exceptional ease of operation. A one-finger swipe across the screen adjusts the center frequency or the reference level. Two-finger gestures adjust the displayed span or level range. The right settings are done in no time.

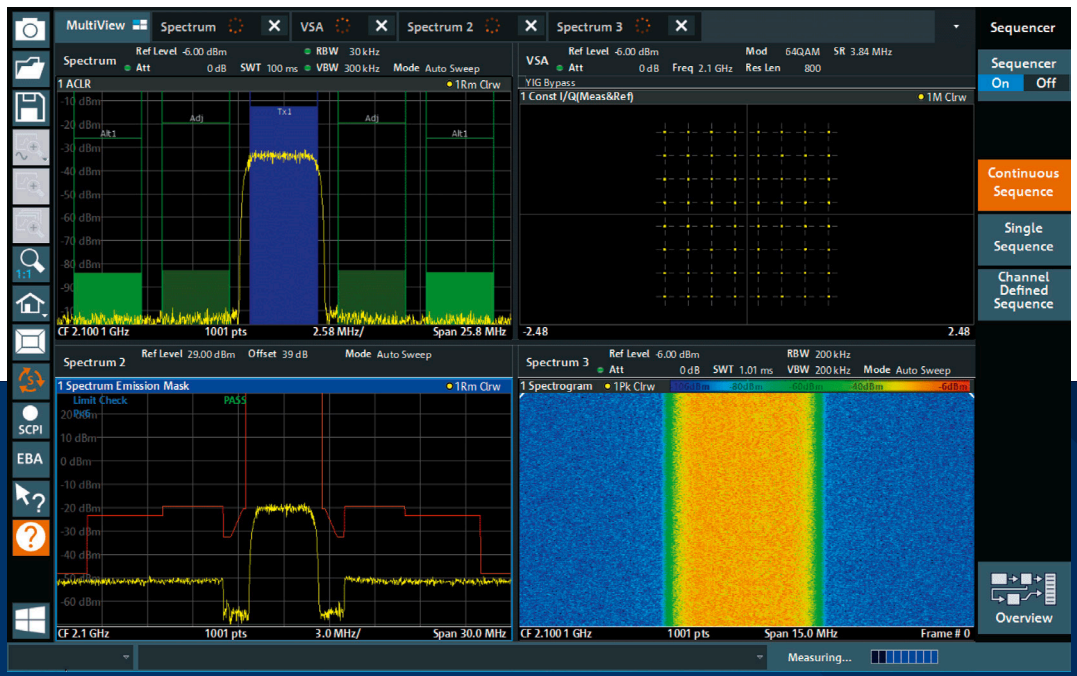
Various measurements can be displayed simultaneously in separate windows on the large 10.1" screen. This greatly facilitates result interpretation. The MultiView function displays all active measurements on one screen. With the sequencer function, all channels are measured consecutively, one after the other. The user is provided with constantly updated results, and no time-consuming parameter adjustments are necessary.

SCPI recorder for fast automation

The R&S®FSV3000 embedded SCPI recorder accelerates the programming of executable control scripts. All manual user input is translated into SCPI commands that can be exported as plain SCPI or in the syntax of common programming languages and tools such as C++, Python and MATLAB®.

If manual code adaptation is required, context-sensitive online help provides comprehensive information, including SCPI commands and parameters.

MultiView displays all active measurements at the same time.



Event based actions dialog

Troubleshooting in R&D regularly requires the analysis of sporadic events, for instance failure to comply with limit lines or specified EVM values. The R&S®FSV3000 lets you define rules to perform specific actions in response to such events, for instance storing I/Q data or screenshots. A final report lists all triggered events over an extended period.

The setup is done on a simple GUI, eliminating the need for an external PC for remote control.

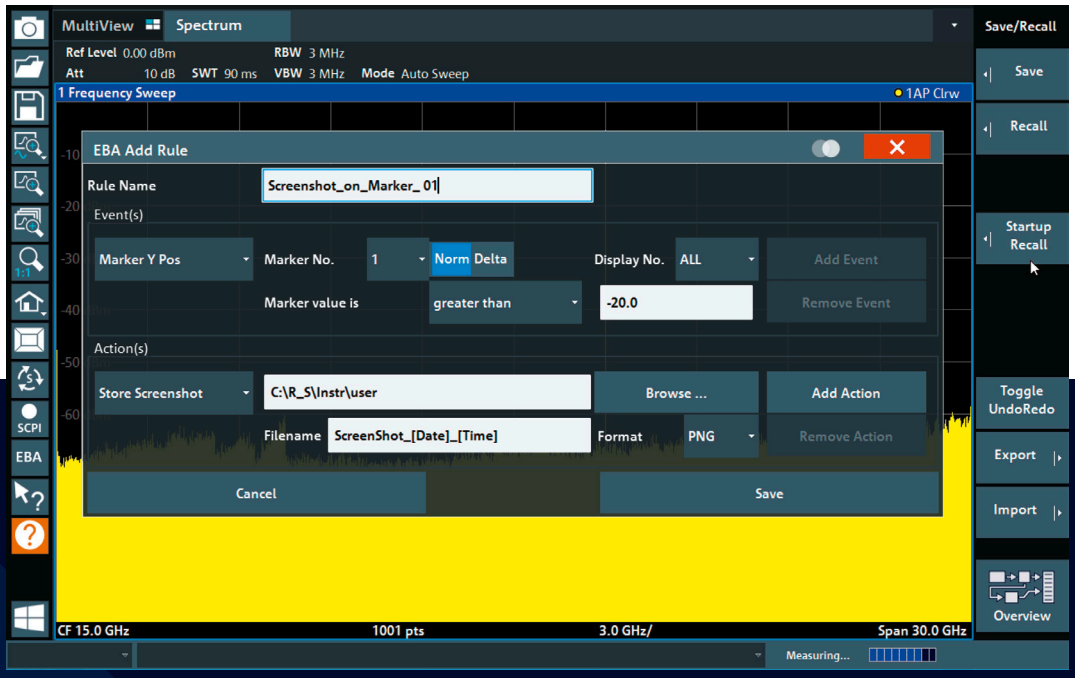
Autoset

The autoset feature allows you to quickly configure frequently performed measurements such as occupied bandwidth, spectrum, TDP, CCDF, APD and C/N. With the autoset feature, the instrument detects the parameters of an incoming signal and automatically sets the appropriate frequency, level, trigger and gating. For standard conformant ACLR and SEM measurements, the settings are automatically configured in line with the corresponding standard.

Smart signal generator control

Many measurements require a signal generator, either to provide a simple CW signal or a modulated carrier. For such applications, the interaction between the R&S®FSV3000 and a generator such as the R&S®SMBV100B vector signal generator goes far beyond classic signal tracking. With the coupling manager, the analyzer directly controls the generator. Changes of frequency or level on the analyzer are directly taken over by the generator. The user interface of the generator can be displayed on the analyzer, so the user can operate the complete setup from a single screen. The SCPI recorder can also be coupled. Manual settings on either instrument are recorded in a single script. Advanced amplifier measurements with digital predistortion are possible. The analyzer directly provides the predistorted waveform to the generator. The hardware can be coupled via the optional 1 GHz clock reference for better phase synchronization.

In many cases, the event based actions dialog eliminates the need for an external PC. Instead of SCPI programming, IF-THEN commands are set up via the GUI.



CLEARLY STRUCTURED, INTUITIVE GUI

10.1" high-resolution, multitouch display
- 1280 × 800 pixel
- Multitouch operation

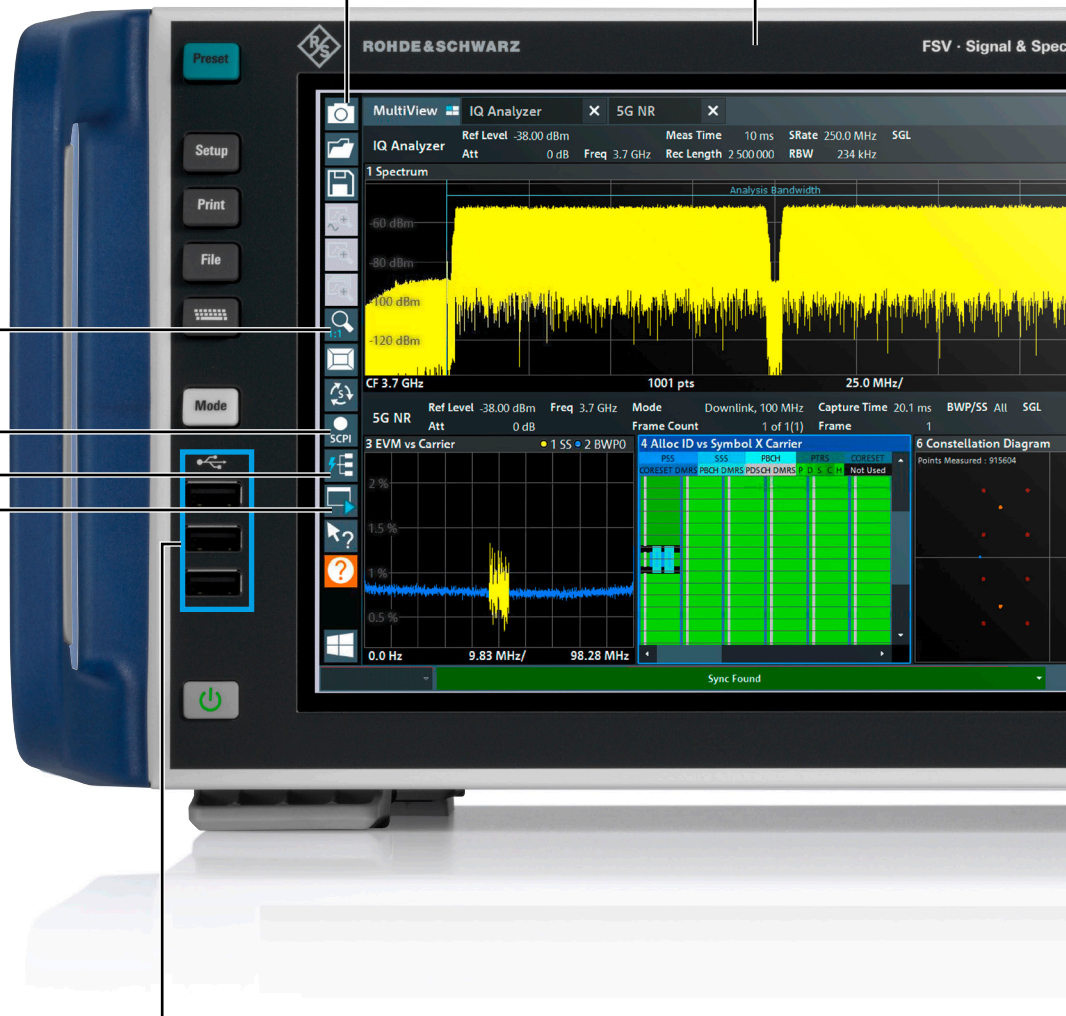
Toolbar
- Quickly access frequently used functions
- Load and save configurations
- Take screenshots
- Zoom into graphs
- Configure displayed items

Zoom into graphs
- Zoom into graphs for a detailed view
- Zoom into multiple areas simultaneously
- Adapt hardware settings to zoom area

SCPI recorder
- Simplified code generation for automatic, remote controlled measurements

Event based actions
- Configure and apply IF-THEN tasks right on the GUI
- Trigger on sporadic events for quick troubleshooting

Application starter
- Quick access to .exe or .com Windows programs



Three USB 2.0 ports
- For storage media
- For connecting accessories
- For power sensors with USB connector (additional USB 2.0/USB 3.0 ports on rear panel)

MultiView and sequencer

- Display all active measurements on one screen
- Measure all channels consecutively
- Receive continually updated results

Autoset

- Automatic setting of frequency, level, trigger and gating based on the incoming signal
- Automatic selection of ACLR and SEM parameter tables in line with the corresponding standard

Start commonly used measurements

- ACLR, OBW, TOI, C/N, SEM

Removable solid-state disk

- Option

Probe power supply

- +15 V DC, –12.6 V DC and ground

Smart port

- For power sensors
- For smart noise sources

Settings overview

- Display and adapt all hardware related settings on one screen

READY FOR 5G AND OTHER WIRELESS STANDARDS

The R&S®FSV3000 signal and spectrum analyzer is ideal for analyzing wireless communications signals in R&D, system testing, verification and production.

More bandwidth

Modern communications signals require ever more bandwidth. With 200 MHz of analysis bandwidth, the R&S®FSV3000 sets a new standard in its class. It allows capturing two contiguous 5G NR component carriers simultaneously. This saves measurement time and makes it possible to analyze interactions and timing between the carriers. When the YIG filter is bypassed (YIG preselector bypass option), the 200 MHz bandwidth is available up to the maximum frequency of the respective analyzer model, e.g. 44 GHz. The R&S®FSV3000 features an excellent dynamic range, which is beneficial not only for spectral measurements but also for analyzing and demodulating signals with a high crest factor, such as OFDM signals or signals with a high modulation order. Excellent EVM values better than 1 % can be achieved for 160 MHz wide WLAN signals at 2.4 GHz and 5.8 GHz and also for 5G NR signals at 28 GHz. This increases the margin for the DUT as it minimizes the error introduced by the measuring instrument.

Support of all modern wireless standards

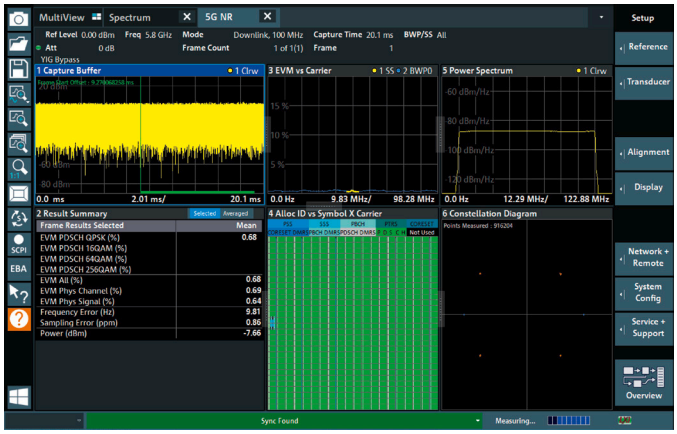
The R&S®FSV3000 provides signal analysis options for all modern wireless and cellular communications standards, i.e.

- 3GPP 5G NR
- EUTRA/LTE/LTE-Advanced
- NB-IoT downlink
- WCDMA
- GSM/EDGE/EDGE Evolution
- WLAN IEEE 802.11a/b/g/n/p/ac/ax/be
- Bluetooth® Basic Rate/Enhanced Data Rate/Low Energy

R&S®FE50DTR external frontend with R&S®SMM100A vector signal generator and R&S®FSVA3000 signal and spectrum analyzer.

Best signal analysis performance with external frontends

5G NR signal analysis at microwave frequencies usually takes place in anechoic chambers where space is scarce. The R&S®FE50DTR and R&S®FE44S external frontends solve this challenge. With separation of frequency upconversion and downconversion from the signal analyzer and generator, the small radio head can be mounted close to the antenna in order to reduce cable losses. Additionally, lower frequency base units can be used, allowing for an upgrade of existing FR1 setups. The excellent radio quality of the R&S®FE50DTR and R&S®FE44S allow all relevant in-band measurements in line with 3GPP and provides EVM performance up to 0.35 % for 100 MHz wide 5G NR signals at 28 GHz.



Analysis of a 5G NR signal with the R&S®FSV3-K144 (downlink) and R&S®FSV3-K145 (uplink) options.

FAST MEASUREMENT SPEED FOR PRODUCTION

Automated production of components, modules and devices requires spectral measurements as well as signal demodulation. The R&S®FSV3000 signal and spectrum analyzer performs even complex measurements in a minimum of time.

The R&S®FSV3000 has been designed for high-speed performance in automated test systems. It performs spectral measurements, signal demodulation and switching between different measuring modes in a minimum of time. Its synthesizer technology enables fast frequency switching. FFT based ACLR and SEM measurements are faster than swept spectrum measurements while offering the same dynamic range.

The R&S®FSV3-K147 option enables combined and automated ACLR, SEM and EVM measurements on 5G NR downlink signals. This feature provides significant speed advantages thanks to parallelized calculations and adaptable trigger settings. It is especially advantageous for over-the-air (OTA) characterization of devices, which involves a large number of measurements.

The enhanced computing power option provides a quad core CPU and a PCIe 3.0 bus system to deliver faster clock speed, higher data transfer rates and more RAM capacity to accelerate digital signal demodulation.

Ready for cloud based testing

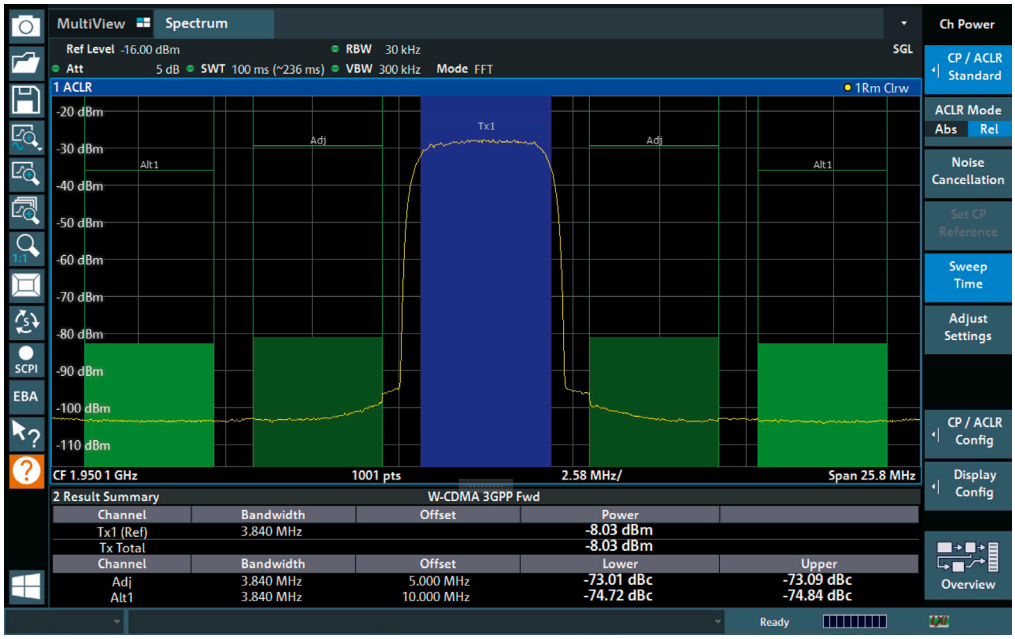
In cloud based test systems, signal analysis is done on external CPUs. This requires the transfer of huge amounts of I/Q data. The R&S®FSV3000 perfectly interacts with cloud based processing. Its architecture enables fastest transfer of I/Q measurement data. The optional 10 Gbit/s LAN interface allows I/Q data transfer even at the high sample rates required for 200 MHz analysis bandwidth.

Emulation modes for legacy instruments

Replacing legacy equipment in automated test systems can be a laborious task if all control code has to be rewritten.

The R&S®FSV3000 simplifies the replacement of obsolete instruments. Emulation modes for many legacy analyzers, including R&S®FSP, R&S®FSU/R&S®FSQ, R&S®FSV, Keysight PSA, Keysight PXA and HP 856x/HP 8560E, make it possible to keep existing code. Now there is no reason to hesitate to upgrade your legacy equipment to an R&S®FSV3000.

FFT based ACLR measurements provide significant speed improvements over swept measurements while the R&S®FSV3000 maintains its excellent dynamic range.



HEALTH AND UTILIZATION MONITORING SERVICE (HUMS)

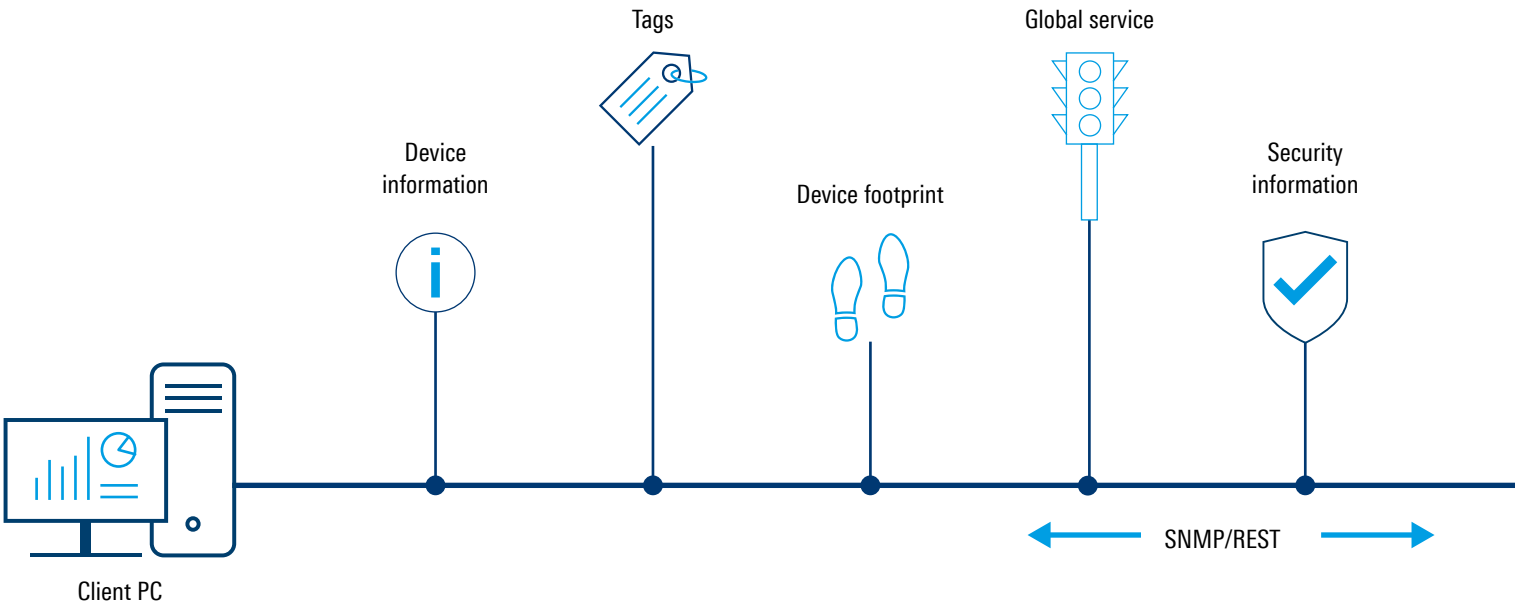
Increase utilization, avoid downtime and reduce costs.

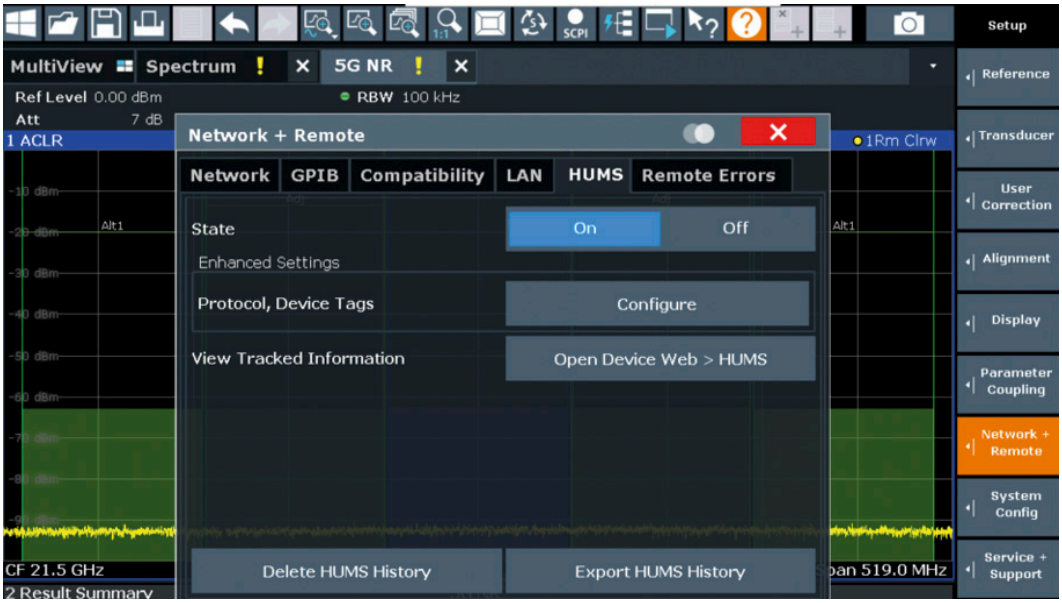
Nowadays, more and more test and measurement equipment is connected to the local network. Monitoring this equipment is necessary to increase the overal instrument utilization, avoid downtimes and optimize costs.

The R&S®FSV3000 offers the optional R&S®FSV3-K980 health and utilization monitoring service software option for easy monitoring of the instrument use, status and health.

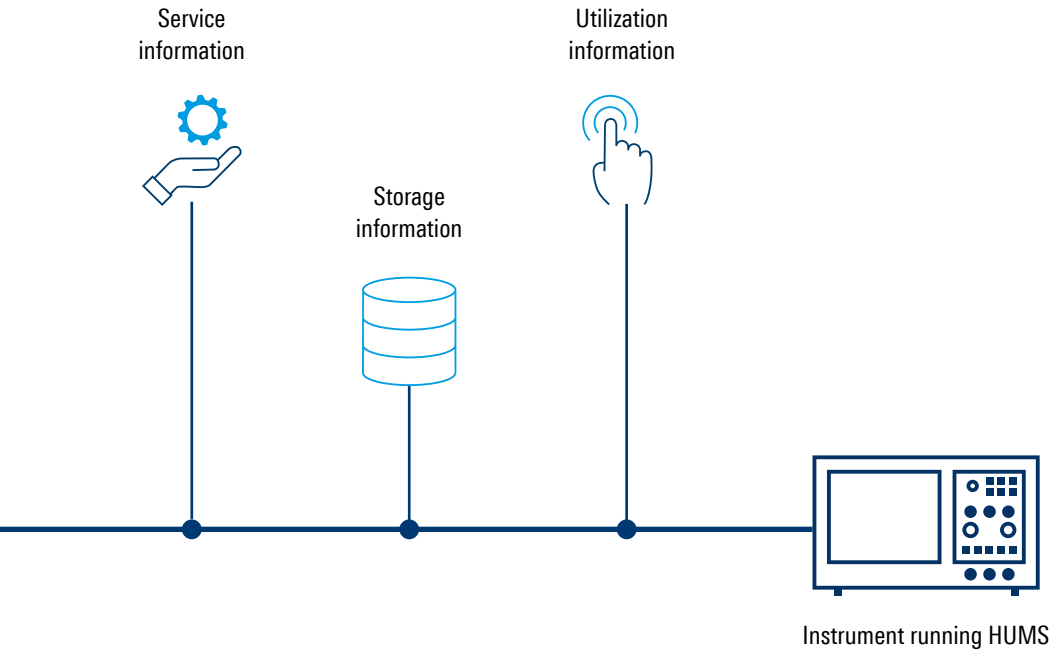
The software runs as a service in the background on the device operating system and communicates with the operating system (OS) and the device firmware. HUMS can be accessed via an SNMP or REST interface and provides all necessary information about the health status and utilization over time.

The R&S®FSV3-K980 HUMS option provides utilization and health data via SNMP or REST interfaces





The R&S®FSV3-K980 HUMS option configuration.



WIDE RANGE OF MEASUREMENT APPLICATIONS

GENERAL-PURPOSE MEASUREMENT APPLICATIONS

Measurement application	Measurement parameters	Measurement functions
R&S®FSV3-K6 Pulse measurements	Pulse parameters: ► Timing: pulse width, pulse repetition interval, duty cycle, rise/fall time, settling time, timestamp, off time ► Frequency: carrier frequency, pulse-to-pulse frequency difference, chirp rate, frequency deviation, frequency error ► Power: peak power, average power, peak-to-average power ratio, pulse-to-pulse power ratio ► Phase: carrier phase, pulse-to-pulse phase difference, phase deviation, phase error ► Amplitude: droop, ripple, overshoot width, top/base power, average on power, average transmitted power, minimum/peak power, peak-to-average/peak-to-min power ratio, pulse-to-pulse power ratio	► Point-in-pulse measurements: frequency, amplitude, phase versus pulse, trend charts and histograms for all parameters ► Pulse statistics: standard deviation, average, maximum, minimum ► Pulse tables ► User-defined measurement parameters
R&S®FSV3-K7 Modulation analysis for AM/FM/PM modulated single carriers	► Modulation depth (AM) ► Frequency deviation (FM) ► Phase deviation (PM) ► Modulation frequency ► THD and SINAD ► Carrier power	► AF spectrum ► RF spectrum ► AF scope display ► AF filters (lowpass and highpass) ► Weighting filters (CCITT) ► Squelch
R&S®FSV3-K8 Bluetooth® Basic Rate/Enhanced Data Rate/Low Energy measurements	► Packet type ► Packet length ► Output power ► Delta frequency (Δf) ► Frequency drift ► ICFT	► RF spectrum ► RF envelope ► Constellation ► Demod waveform ► Symbols
R&S®FSV3-K18 Amplifier measurements **R&S®FSV3-K18D** Direct DPD measurements **R&S®FSV3-K18F** Frequency response and group delay **R&S®FSV3-K18M** Memory-polynomial DPD	► AM/AM, AM/PM, EVM ► Width of AM/AM and AM/PM curves ► Magnitude, phase and group delay versus frequency (R&S®FSV3-K18F) ► Polynomial coefficients (R&S®FSV3-K18) ► Memory-polynomial coefficients (R&S®FSV3-K18M)	► General amplifier measurements ► Polynomial based digital predistortion (R&S®FSV3-K18) ► Direct digital predistortion (R&S®FSV3-K18D) ► Memory-polynomial predistortion (R&S®FSV3-K18M) ► Control and synchronization of an external signal generator, e.g. the R&S®SMBV100B vector signal generator ► Characterization of dynamic behavior of two-port devices ► Real-time memory DPD (with Hammerstein model) (R&S®FSV3-K18M)
R&S®FSV3-K30 Noise figure and gain measurements based on Y-factor method	► Noise figure ► Noise temperature ► Gain ► Y-factor	► Analyzer noise correction (second stage correction) ► Measurements on frequency-converting DUTs ► Control of a generator as an LO in frequency-converting measurements ► SSB and DSB
R&S®FSV3-K40 Phase noise measurements	► SSB phase noise ► Residual FM and residual PM ► Jitter	► 1 Hz to 10 GHz offset range ► Selection of resolution bandwidth and number of averages for each offset range ► Definable evaluation ranges for residual FM/PM ► Signal tracking ► Optional suppression of spurious emissions

Measurement application	Measurement parameters	Measurement functions
R&S®FSV3-K54 EMI measurements	EMI diagnostics and precompliance measurements in line with commercial and military standards: ▶ Disturbance voltage ▶ Disturbance power ▶ Radiated disturbance	▶ EMI detectors and resolution bandwidths in line with CISPR 16-1-1, MIL-STD-461 and DO-160 ▶ Limit line library as specified in the latest EMI standards ▶ Test automation and reporting for fast and repeatable measurements ▶ Transducer factors for antennas, cables, LISNs, etc. ▶ Support of R&S®ELEKTRA EMC test software
R&S®FSV3-K60 Transient measurements **R&S®FSV3-K60C** Transient chirp measurements **R&S®FSV3-K60H** Transient hop measurements **R&S®FSV3-K60P** Transient phase noise measurements	▶ Frequency hopping signals: dwell time, settling time, switching time, frequency deviation, power, phase deviation, power ripple ▶ Chirp signals: frequency deviation, chirp begin, chirp length, chirp rate, chirp state deviation, phase deviation, power, power ripple	▶ Spectrogram and spectrogram sections, tabular display, frequency, frequency error, phase and amplitude versus time, FFT spectrum ▶ Pan and zoom functions to select analysis region using touch gestures; supported in spectrogram, frequency and time domain trace displays ▶ Phase noise ▶ Frequency and phase deviation spectrograms ▶ Trend charts and histograms for all parameters ▶ Chirp and hop statistics: standard deviation, average, maximum and minimum ▶ User-defined measurement parameters
R&S®FSV3-K70 Vector signal analysis **R&S®FSV3-K70M** Multimodulation analysis **R&S®FSV3-K70P** BER PRBS measurements	Analysis of digitally modulated single carriers down to bit level: ▶ EVM ▶ MER ▶ Phase error ▶ Magnitude error ▶ Carrier frequency error ▶ Symbol rate error ▶ I/Q skew ▶ Rho ▶ I/Q offset, I/Q imbalance, quadrature error ▶ Amplitude droop ▶ Power ▶ Bit error rate of known data streams ▶ Bit error rate of bit streams generated with PRBS shift registers (R&S®FSV3-K70P) ▶ Analysis of vector modulated signals with multiple modulations, e.g. DVB-S2(X) (R&S®FSV3-K70M)	▶ Eye diagram ▶ Constellation diagram ▶ Vector diagram ▶ Histogram ▶ Equalizer ▶ Multiple modulation formats, e.g.: – 2FSK to 64FSK – MSK, GMSK, DMSK – Multiple PSKs (e.g. BPSK, QPSK, 8PSK, 3π/8-8PSK and more) – 16QAM to 1024QAM – 16APSK (DVB-S2), 32APSK (DVB-S2), 2ASK, 4ASK – User-definable constellations
R&S®FSV3-K96 OFDM signal analysis	Analysis of custom OFDM signals: ▶ EVM (pilots, data, pilots and data) ▶ EVM versus carrier versus symbol ▶ Frequency error ▶ Sampling clock error ▶ I/Q offset ▶ Gain imbalance ▶ Quadrature error ▶ Power versus time ▶ Power spectrum ▶ Power versus carrier versus symbol ▶ Channel flatness ▶ Group delay ▶ Impulse response ▶ Bitstream	▶ Constellation diagram ▶ CCDF ▶ Channel estimation and compensation using phase, timing and level tracking ▶ Configuration file wizard ▶ Free configuration of pilot and data carriers and modulation schemes

WIDE RANGE OF MEASUREMENT APPLICATIONS

MEASUREMENT APPLICATIONS FOR WIRELESS COMMUNICATIONS SYSTEMS

Measurement application	Power	Modulation quality	Spectrum measurements	Miscellaneous	Special features
R&S®FSV3-K10 GSM/EDGE/ EDGE Evolution	▶ Power measurement in time domain, including carrier power	▶ EVM ▶ Phase/frequency error ▶ Origin offset suppression ▶ Constellation diagram	▶ Modulation spectrum ▶ Transient spectrum		▶ Single burst and multiburst ▶ Automatic detection of modulation format
R&S®FSV3-K72/-K73 3GPP FDD (WCDMA)	▶ Code domain power ▶ Code domain power versus time ▶ CCDF	▶ EVM ▶ Peak code domain error ▶ Constellation diagram ▶ I/Q offset ▶ Residual code domain error ▶ I/Q imbalance ▶ Gain imbalance ▶ Center frequency error (chip rate error)	▶ Spectrum mask ▶ ACLR ▶ Power measurement	▶ Channel table with channels used on base station ▶ Timing offset ▶ Power versus time	▶ Automatic detection of active channels and decoding of useful information ▶ Automatic detection of encryption code ▶ Automatic detection of HSDPA modulation format ▶ Support of compressed mode signals ▶ Support of HSPA and HSPA+ (HSDPA+ and HSUPA+)
R&S®FSV3-K91 WLAN IEEE 802.11a/b/g **R&S®FSV3-K91P** WLAN IEEE 802.11p **R&S®FSV3-K91N** WLAN IEEE 802.11n **R&S®FSV3-K91AC** WLAN IEEE 802.11ac **R&S®FSV3-K91AX** WLAN IEEE 802.11ax **R&S®FSV3-K91BE** WLAN IEEE 802.11be	▶ Power versus time ▶ Burst power ▶ Crest factor	▶ EVM (pilot, data) ▶ EVM versus carrier ▶ EVM versus symbol ▶ Constellation diagram ▶ I/Q offset ▶ I/Q imbalance ▶ Gain imbalance ▶ Center frequency error ▶ Symbol clock error ▶ Group delay	▶ Spectrum mask ▶ ACLR ▶ Power measurement ▶ Spectrum flatness	▶ Bit stream ▶ Signal field ▶ Constellation versus carrier	▶ Automatic detection of burst type ▶ Automatic detection of MCS index ▶ Automatic detection of bandwidth ▶ Automatic detection of guard interval ▶ Estimation of payload length from burst ▶ IEEE 802.11ax PPDU formats: HE SU PPDU, HE MU PPDU, HE trigger based PPDU, HE extended range SU PPDU ▶ IEEE 802.11be PPDU formats: EHT MU PPDU (compressed, non-compressed), ETH trigger based PPDU
R&S®FSV3-K100/ -K101/-K104/-K105 EUTRA/LTE TDD and FDD uplink and downlink	▶ Power measurement in time and frequency domains ▶ CCDF	▶ EVM ▶ Constellation diagram ▶ I/Q offset ▶ Gain imbalance ▶ Quadrature error ▶ Center frequency error (symbol clock error)	▶ Spectrum mask ▶ ACLR ▶ Power measurement ▶ Spectrum flatness	▶ Bit stream ▶ Allocation summary list ▶ Averaging over multiple measurements	Automatic detection of modulation format, cyclic prefix length and cell ID

Measurement application	Power	Modulation quality	Spectrum measurements	Miscellaneous	Special features
R&S®FSV3-K102 EUTRA/LTE MIMO		► R&S®FSV3-K100 and -K104 modulation quality measurements for each individual MIMO path			► MIMO time alignment for R&S®FSV3-K100/-K104 ► Interband carrier aggregation time alignment
R&S®FSV3-K103 EUTRA/ LTE-Advanced uplink			► Multicarrier ACLR for FDD and TDD ► SEM for contiguously aggregated component carriers		
R&S®FSV3-K106 EUTRA/LTE NB-IoT downlink measurements	► Power measurement in time and frequency domains	► EVM ► Constellation diagram ► Frequency error ► Sampling error	► Spectrum flatness, ACLR, SEM	► Allocation summary list	► Standalone, guard band and in-band operation ► Automatic detection of cell ID
R&S®FSV3-K144 5G NR downlink measurements **R&S®FSV3-K145** 5G NR uplink measurements **R&S®FSV3-K147** 5G NR combined ACLR/SEM/EVM measurements **R&S®FSV3-K148** 5G NR Rel. 16 extension for uplink/downlink measurements **R&S®FSV3-K171** 5G NR Rel. 17 extension for uplink/downlink measurements **R&S®FSV3-K175** Extension for O-RAN measurements	► Power versus time	► EVM ► EVM xPDSCH ► Constellation diagram ► I/Q offset ► I/Q imbalance ► Gain imbalance ► Center frequency error	► Multicarrier ACLR, SEM	► Allocation summary list ► Channel table with channels used on base station	► Automatic detection of cell ID ► Support of multiple bandwidth parts
R&S®FSV3-K544 Frequency response correction	► SnP file in Touchstone file format	► Corrects frequency response (amplitude and phase) of the measurement setup	► Frequency response correction	► SnP file in Touchstone file format	► Corrects frequency response (amplitude and phase) of the measurement setup

SPECIFICATIONS IN BRIEF

Specifications in brief		
Frequency		
Frequency range	R&S®FSV3004	10 Hz to 4 GHz
	R&S®FSV3007	10 Hz to 7.5 GHz
	R&S®FSV3013	10 Hz to 13.6 GHz
	R&S®FSV3030	10 Hz to 30 GHz
	R&S®FSV3044	10 Hz to 44 GHz
	R&S®FSV3050	10 Hz to 50 GHz
Aging of frequency reference		1×10^{-6} per year
	with R&S®FSV3-B4 option	1×10^{-7} per year
Bandwidth	standard filter	1 Hz to 10 MHz
Resolution bandwidth	RRC filter	18 kHz (NADC), 24.3 kHz (TETRA), 3.84 MHz (3GPP), 4.096 MHz
	channel filter	100 Hz to 5 MHz
	video filter	1 Hz to 10 MHz
I/Q demodulation bandwidth	standard	28 MHz
	with R&S®FSV3-B40 option	40 MHz
	with R&S®FSV3-B200 option	200 MHz
I/Q demodulation bandwidth via analog baseband inputs	with R&S®FSV3-B271 option	I only, Q only: DC to 200 MHz; I + jQ: –200 MHz to +200 MHz
Phase noise (with R&S®FSV3-B710 option)	1 GHz carrier	
	1 kHz offset	< –109 dBc (1 Hz)
	10 kHz offset	< –114 dBc (1 Hz)
	100 kHz offset	< –119 dBc (1 Hz)
	1 MHz offset	< –135 dBc (1 Hz)
Displayed average noise level (DANL)	1 GHz	–151 dBm (typ.)
DANL with preamplifier (R&S®FSV3-B24 option)	50 MHz ≤ f < 3 GHz	–165 dBm (typ.)
Intermodulation		
Third order intercept (TOI)	1 GHz	> 15 dBm, 18 dBm (typ.)
Total measurement uncertainty	2 GHz	0.29 dB

RELATED DOCUMENTS

Title of document	PD No.
R&S®FSV3000 Signal and Spectrum Analyzer – Specifications	5216.1334.22
R&S®VSE Vector Signal Explorer Software – Product Brochure	3607.1371.12
R&S®FS-SNS Smart Noise Sources – Product Brochure	5216.2718.12
EMI Measurement Application for Signal and Spectrum Analyzers – R&S®FSW-K54, R&S®FSV3-K54, R&S®FPL1-K54, R&S®FSV-K54 – Product Brochure	3608.3949.12
R&S®FE50DTR External Frontend 36 GHz to 50 GHz – Product Brochure	3609.5551.12
R&S®FE44S External Frontend 24 GHz to 44 GHz – Product Brochure	3609.5545.12