

R&S® FE44S

EXTERNAL FRONTEND

24 GHz to 44 GHz

Signal generation and analysis
at device connection



Product Brochure
Version 02.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The R&S®FE44S external frontend can extend the frequency range up to 44 GHz for Rohde & Schwarz signal and spectrum analyzers as well as signal generators. The R&S®FE44S enables signal up and downconversion directly at the device under test (DUT), lowering cable losses, increasing sensitivity and delivering more power at the antenna in an OTA environment.

The R&S®FE44S is an innovative product that targets 5G frequency bands from 24 GHz to 44 GHz, providing a measurement solution close to the DUT for signal generation and analysis with a bandwidth up to 1 GHz and excellent RF performance.

A base instrument, such as R&S®FSV3000/R&S®FSVA3000 signal and spectrum analyzers and R&S®SMM100A/R&S®SMW200A vector signal generators completely controls the R&S®FE44S. Users benefit from fully transparent frequency extensions for their measurement setups.

The built-in low phase noise frequency generation provides excellent signal quality for both generation and analysis.

Get closer to the device under test

An over-the-air (OTA) test is standard for the 3GPP FR2 frequency ranges. Cable losses and costs increase significantly at these frequencies. The external frontend enables up and downconversion directly at the DUT with better test setup performance and lower costs. The R&S®FE44S is connected to the base instrument at a lower IF frequency. Frequency and amplitude impacts on the IF are automatically compensated in the firmware of the supported base instrument. This reduces measurement uncertainty for the test setup.



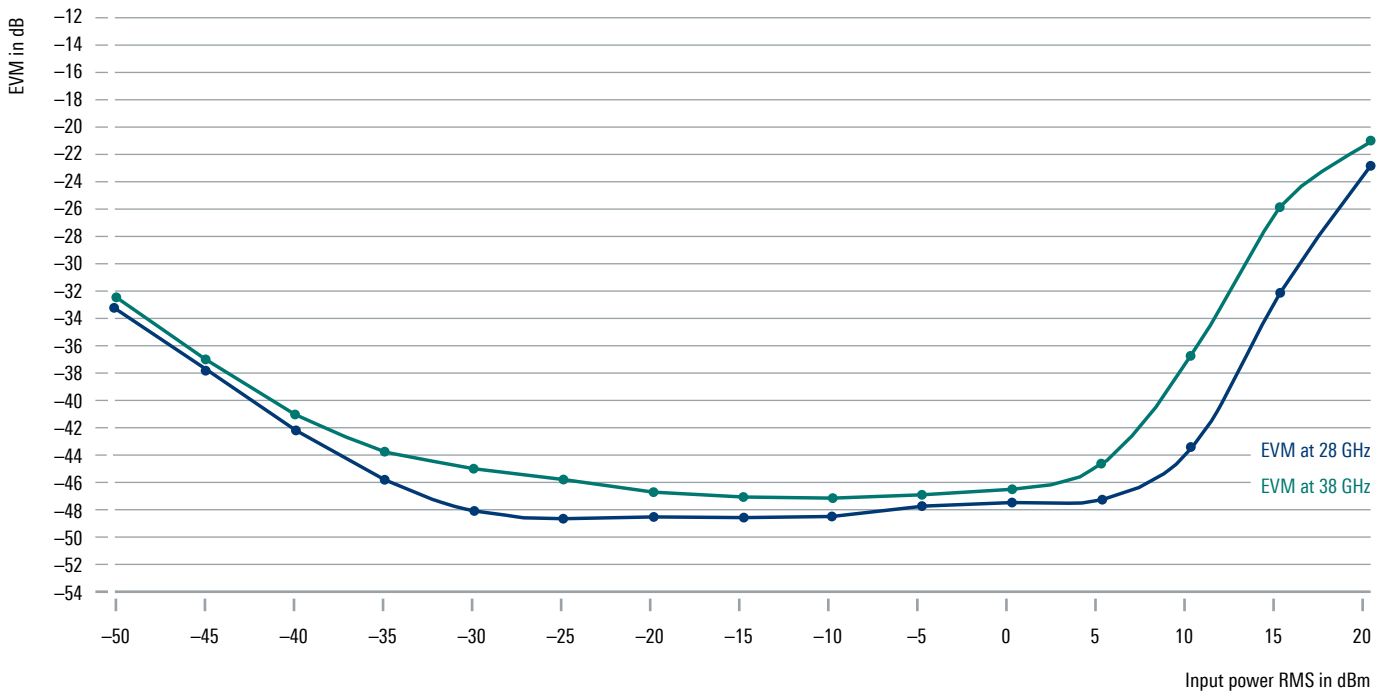
Excellent signal quality on both transmit and receive side

The built-in high-performance VCO with the lowest possible phase noise helps the R&S®FE44S generate signals with the highest fidelity. The excellent phase noise produces a very good signal-to-noise ratio (SNR) at the signal and spectrum analyzer. The EVM is well below 1% (-40 dB) over a wide range. The generated signals also have excellent performance on the transmit side.

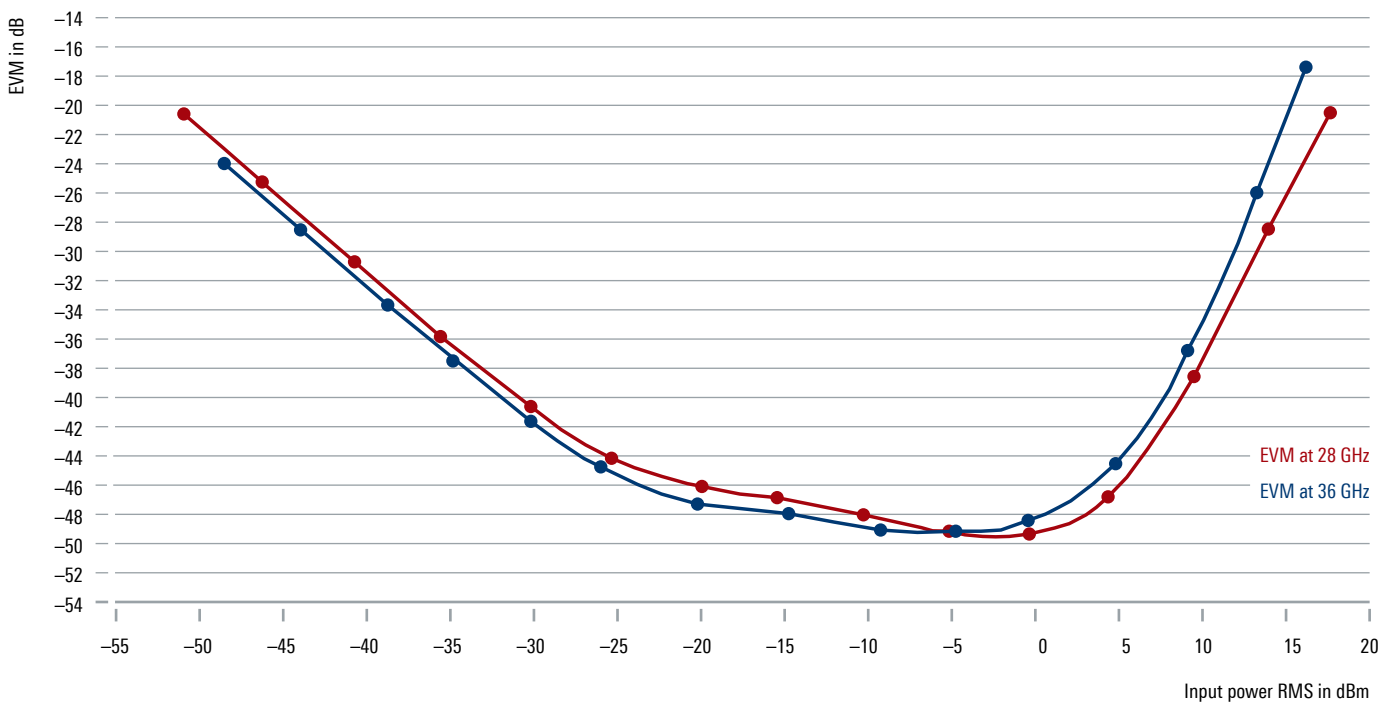
Frequency extension for existing instruments

The R&S®FE44S enables existing R&S®FSV3000/ R&S®FSVA3000 and R&S®SMM100A/R&S®SMW200A to extend their usable range from 3GPP FR1 to 3GPP FR2 frequency bands for increased flexibility.

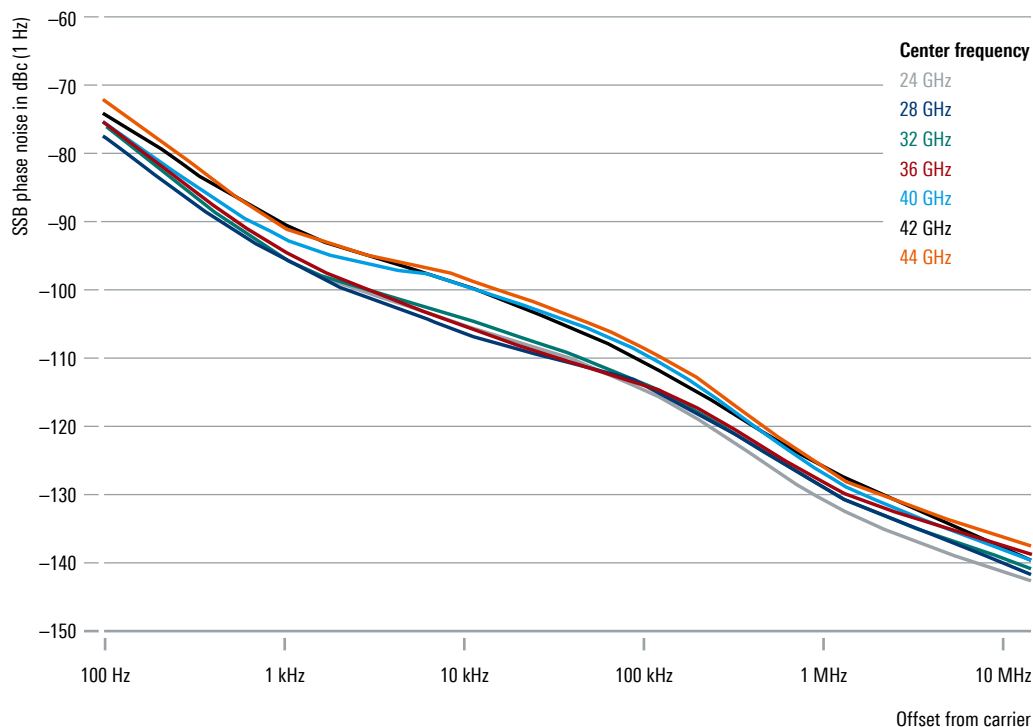
EVM values versus input power (5G NR 100 MHz) at different center frequencies in combination with an R&S®FSVA3000



EVM values versus RMS output power (5G NR 100 MHz) at different center frequencies in combination with an R&S®SMW200A



Typical single sideband phase noise at different center frequencies in combination with an R&S®FSVA3000



SPECIFICATIONS IN BRIEF

Specifications in brief

| | | |
|-------------------------------|--|---------------------------|
| Frequency range | | 24 GHz to 44 GHz |
| Equalized bandwidth | RX and TX mode | 1 GHz |
| Displayed average noise level | $30 \text{ GHz} < f \leq 40 \text{ GHz}$ | -154 dBm, -157 dBm (typ.) |
| Specified level range | $24 \text{ GHz} \leq f_{\text{out}} \leq 36 \text{ GHz}$ | -50 dBm to +14 dBm (PEP) |
| Reference input | | 10 MHz, 640 MHz, 1 GHz |
| LAN interface | | 10/100BASE-T |

ORDERING INFORMATION

| Designation | Type | Order No. |
|---|---------------|--------------|
| External frontend, from 24 GHz to 44 GHz | R&S®FE44S | 1338.7001.02 |
| Accessories supplied | | |
| 12 V power supply | | 3666.4844.00 |
| Two IF cables, SMA, length: 1 m | | 1347.7552.00 |
| Reference cable, SMA, length: 2 m | | 1347.7569.00 |
| Supported base instruments | | |
| Signal and spectrum analyzers (base instruments only) | | |
| 10 Hz to 7.5 GHz | R&S®FSV3007 | 1330.5000.07 |
| 10 Hz to 13.6 GHz | R&S®FSV3013 | 1330.5000.13 |
| 10 Hz to 30 GHz | R&S®FSV3030 | 1330.5000.30 |
| 10 Hz to 44 GHz | R&S®FSV3044 | 1330.5000.43 |
| 10 Hz to 7.5 GHz | R&S®FSVA3007 | 1331.5003.08 |
| 10 Hz to 13.6 GHz | R&S®FSVA3013 | 1331.5003.14 |
| 10 Hz to 30 GHz | R&S®FSVA3030 | 1331.5003.31 |
| 10 Hz to 44 GHz | R&S®FSVA3044 | 1331.5003.44 |
| Vector signal generators | | |
| 100 kHz to 44 GHz, SSB phase noise < -129 dBc | R&S®SMM100A | 1440.8002.02 |
| 100 kHz to 44 GHz, SSB phase noise < -137 dBc | R&S®SMW200A | 1412.0000.02 |
| Options needed for the base instrument | | |
| External frontend control, for R&S®FSV3000/R&S®FSVA3000 | R&S®FSV3-K553 | 1346.4889.02 |
| Minimum needed frequency extension, for R&S®SMW200A | R&S®SMW-B1006 | 1428.4800.02 |
| External frontend control, for R&S®SMW200A | R&S®SMW-K553 | 1414.6758.02 |
| Minimum needed frequency extension, for R&S®SMM100A | R&S®SMM-B1006 | 1440.9009.02 |
| External frontend control, for R&S®SMM100A | R&S®SMM-K553 | 1441.1147.02 |

| Warranty | | |
|---|---------|---|
| Base unit | | 3 years |
| All other items ¹⁾ | | 1 year |
| Service options | | |
| Extended warranty, one year | R&S®WE1 | |
| Extended warranty, two years | R&S®WE2 | |
| Extended warranty with calibration coverage, one year | R&S®CW1 | Please contact your local Rohde & Schwarz sales office. |
| Extended warranty with calibration coverage, two years | R&S®CW2 | |
| Extended warranty with accredited calibration coverage, one year | R&S®AW1 | |
| Extended warranty with accredited calibration coverage, two years | R&S®AW2 | |

¹⁾ For options installed, the remaining base unit warranty applies if longer than 1 year. Exception: all batteries have a 1 year warranty.

Service that adds value

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ 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 85 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.

www.rohde-schwarz.com

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

Rohde & Schwarz training

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