R&S®FE50DTR
EXTERNAL FRONTEND
36 GHz to 50 GHz

Signal generation and analysis at device connection

Product Brochure
Version 03.00

ROHDE&SCHWARZ
Make ideas real

AT A GLANCE

The R&S®FE50DTR external frontend can extend the frequency range up to 50 GHz for Rohde&Schwarz signal and spectrum analyzers as well as signal generators. The R&S®FE50DTR enables signal upconversion and downconversion directly at the device under test (DUT), lowering cable losses, increasing sensitivity and delivering more power at the antenna in an over-the-air (OTA) environment.

The R&S®FE50DTR is an innovative product that targets 5G frequency bands from 36 GHz to 50 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.

Base instruments, such as the R&S®FSV3000/ R&S®FSVA3000 signal and spectrum analyzers, R&S®SMM100A/R&S®SMW200A vector signal generators or the PVT360A VSG/VSA single-box vector tester, completely control the R&S®FE50DTR. Users benefit from fully transparent frequency extensions for their measurements, whether using traditional spectrum analyzers and signal generators or the PVT360A, optimized for FR1 base station, small cell and RF component testing in production and characterization environments.

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

Get closer to the DUT

An OTA test is standard for the 3GPP FR2 frequency ranges. Cable losses and costs increase significantly at these frequencies. The external frontend enables upconversion and downconversion directly at the DUT with better test setup performance and lower costs. The R&S®FE50DTR is connected to the base instrument at a lower IF frequency. Frequency and amplitude impact 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

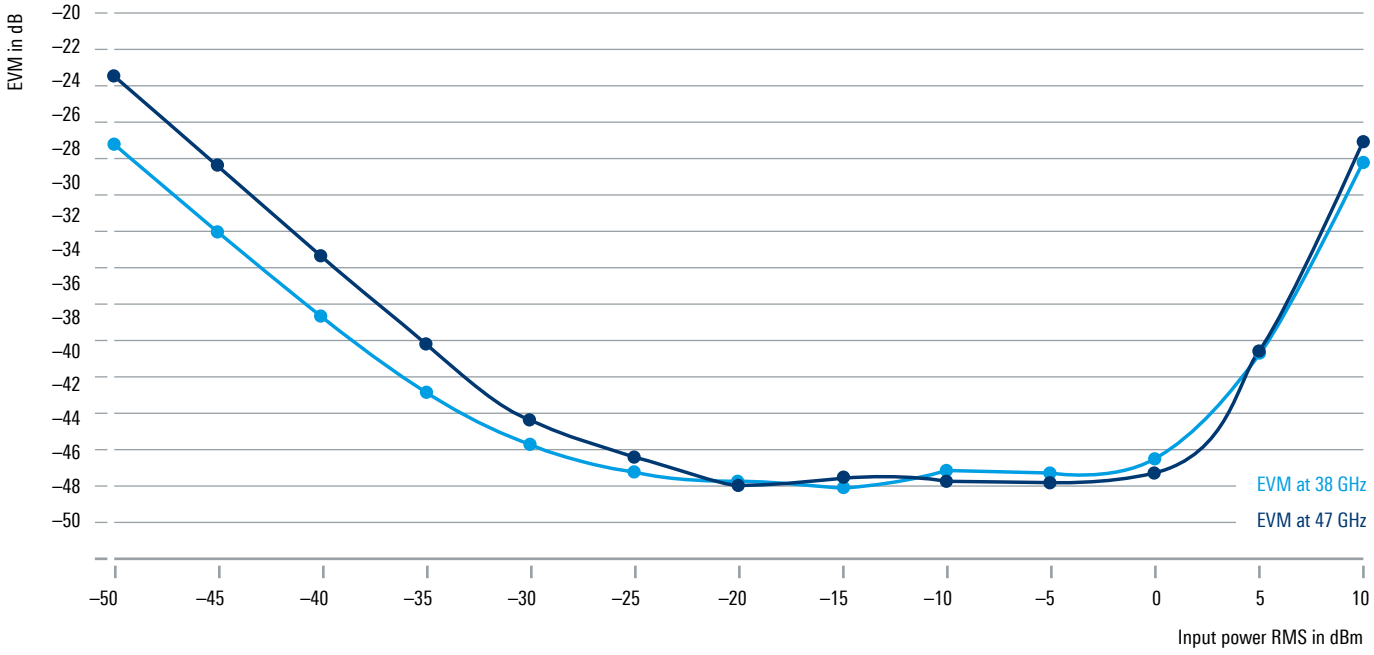
The built-in high-performance voltage-controlled oscillator (VCO) with the lowest possible phase noise helps the R&S®FE50DTR generate signals with the highest fidelity. The excellent phase noise produces a very good signal-to-noise ratio (SNR) at the signal and spectrum analyzer. The EVM is well below 1 % (–40 dB) over a wide range. The generated signals also have excellent performance on the transmit side.

Frequency extension for existing instruments

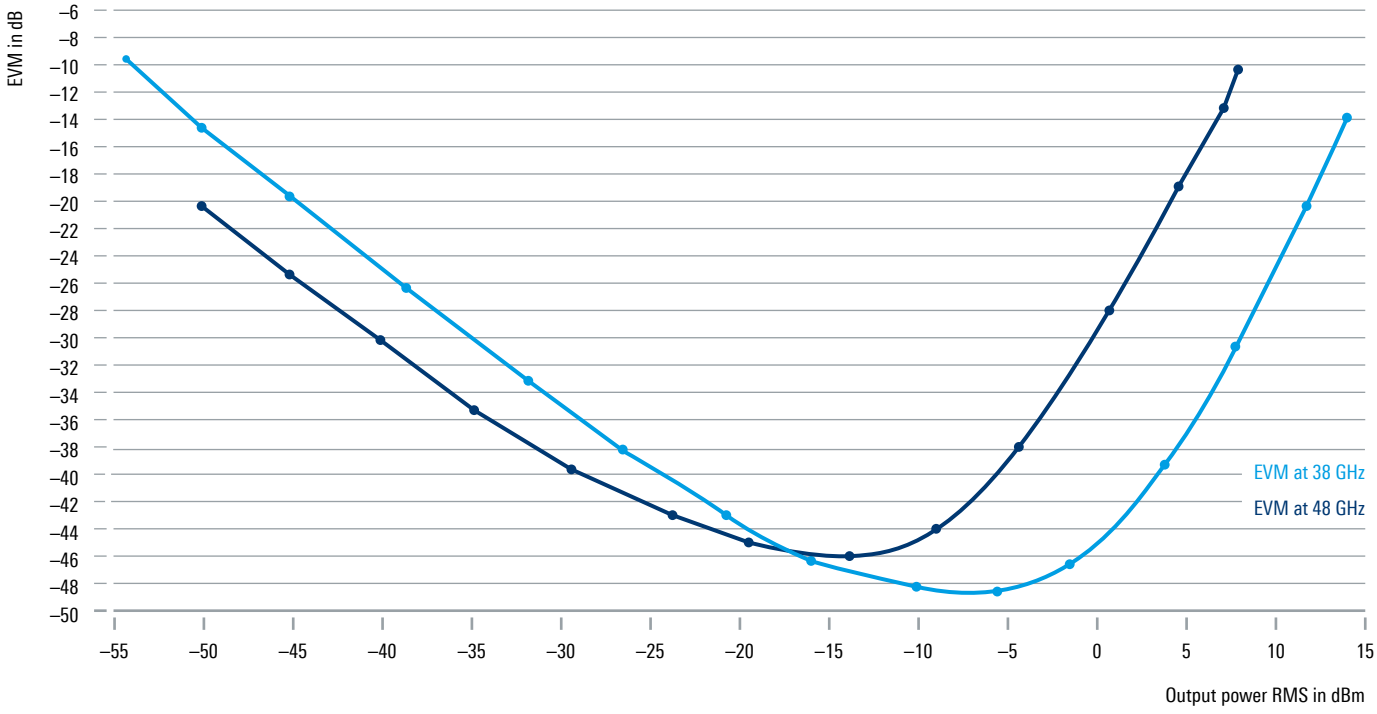
The R&S®FE50DTR extends the usable range from 3GPP FR1 to 3GPP FR2 frequency bands for existing R&S®FSV3000/R&S®FSVA3000 signal and spectrum analyzers, R&S®SMM100A/R&S®SMW200A vector signal generators and the PVT360A for greater flexibility with a wider range of applications.

R&S®FE50DTR connected to the R&S®FSVA3013 signal and spectrum analyzer and the R&S®SMM100A vector signal generator

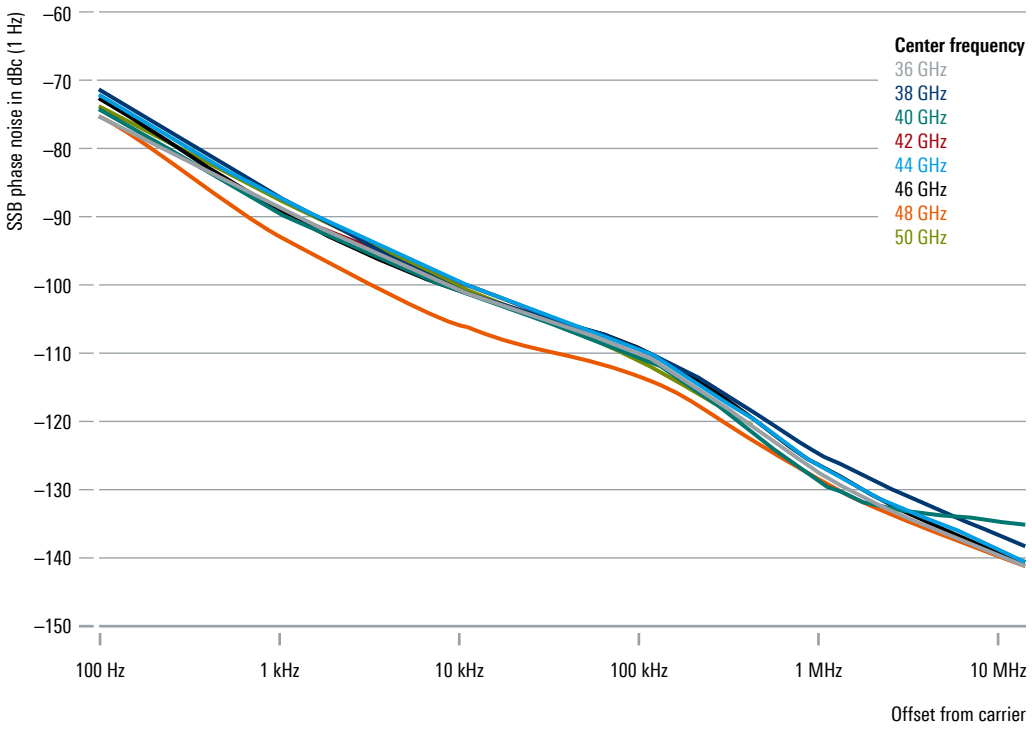
EVM values versus input power (5G NR 100 MHz) at different center frequencies in combination with an R&S®FSVA3000



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		36 GHz to 50 GHz
Equalized bandwidth	RX and TX mode	1 GHz
Displayed average noise level	43 GHz < f ≤ 49 GHz	–150 dBm, –153 dBm (typ.)
Specified level range	36 GHz ≤ f_{out} ≤ 45 GHz	–50 dBm to +10 dBm (PEP)
Reference input		10 MHz, 640 MHz, 1 GHz
LAN interface		10BASE-T/100BASE-T

ORDERING INFORMATION

For ordering information, see the R&S®FE50DTR specifications document (PD 3609.5551.22).

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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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Sustainable product design

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PD 3609.5551.12 | Version 03.00 | September 2025 (st)
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