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

Signal generation and analysis at device connection

3 year warranty

Product Brochure
Version 02.00

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 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®FE50DTR is an innovative product that targets the 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.

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 control the R&S®FE50DTR. 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 reduced costs. The R&S®FE50DTR 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.

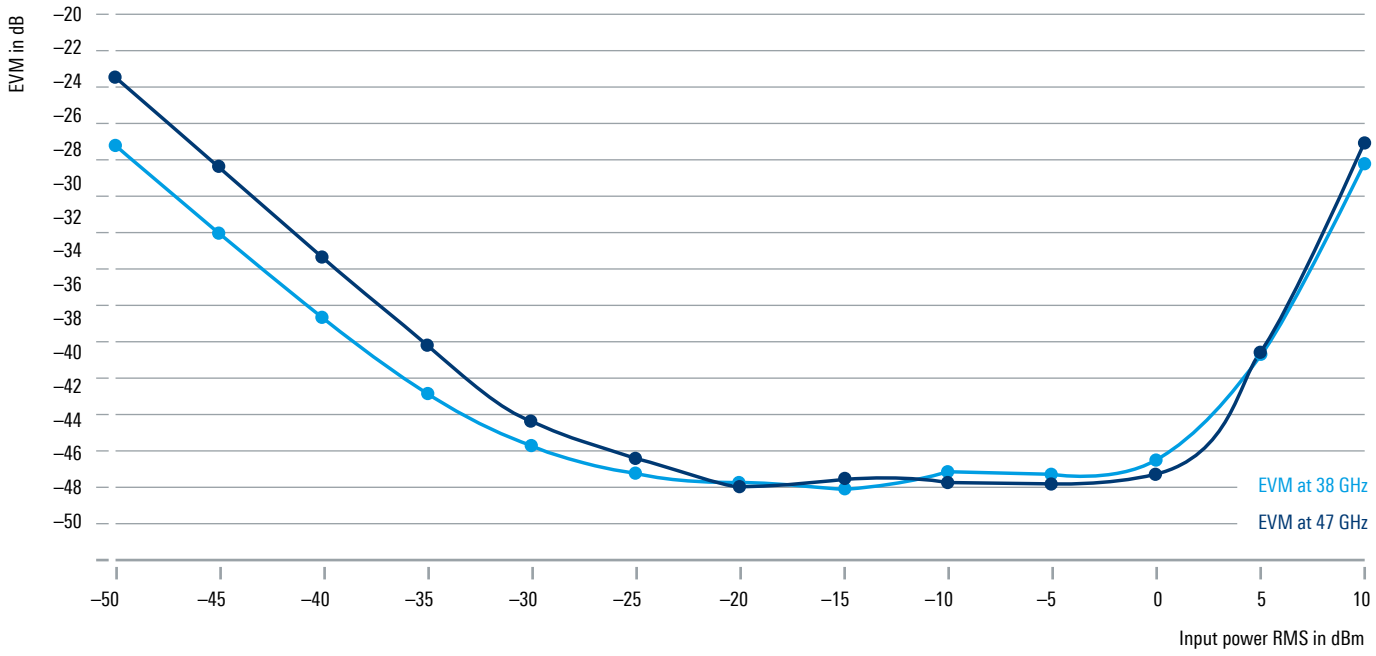
Excellent signal quality on both transmit and receive side

The built-in high-performance VCO with 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.

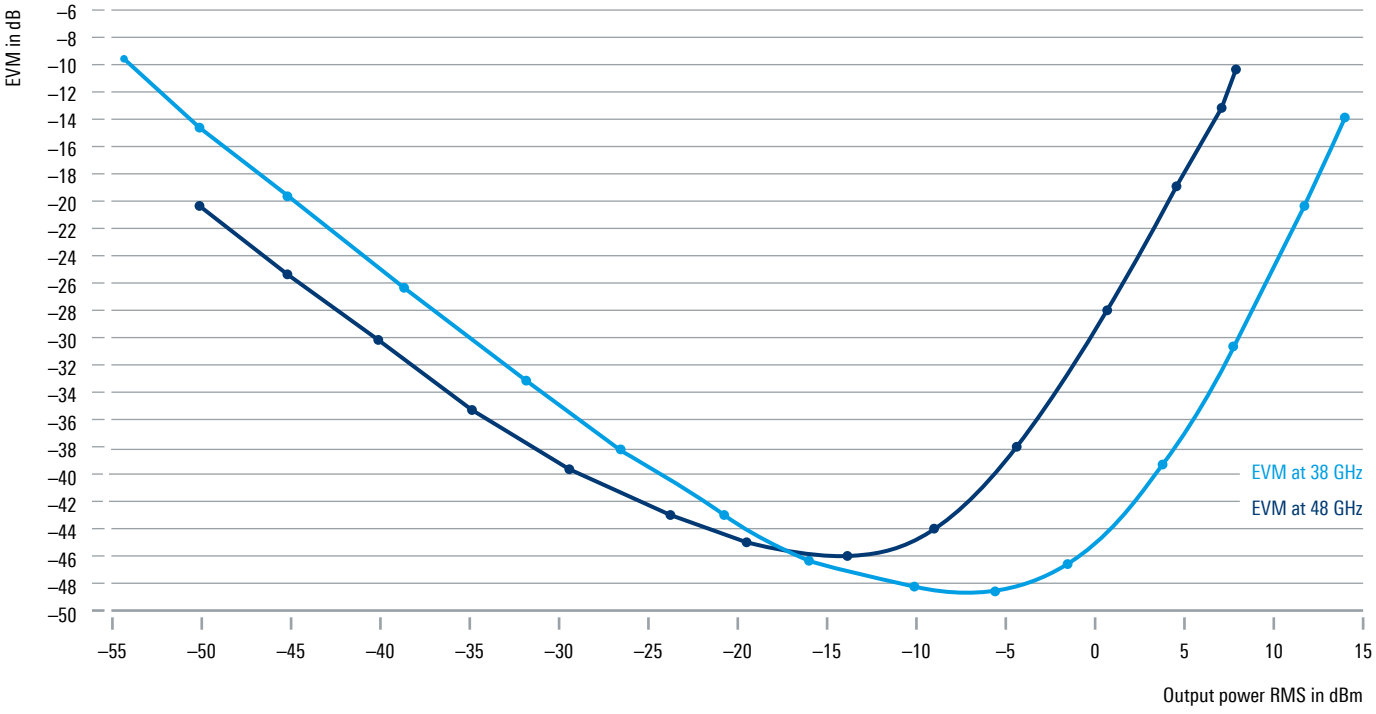
Frequency extension for existing instruments

The R&S®FE50DTR 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.

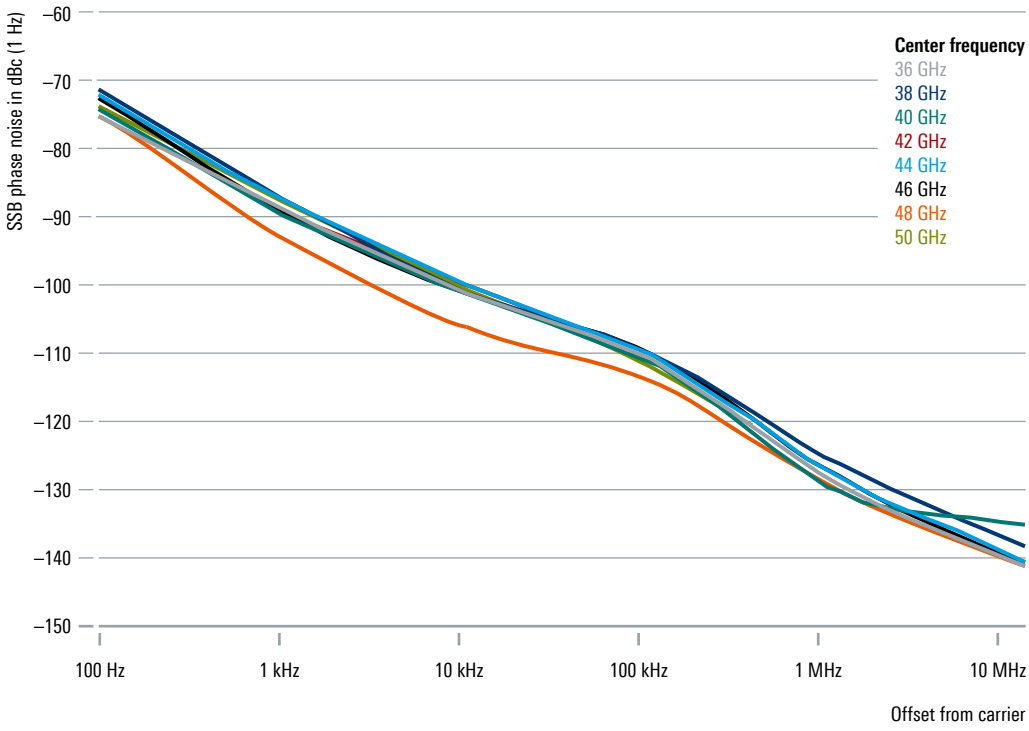
EVM values versus input power (5G NR 100 MHz) at different center frequencies in combination with an R&S®FSVA3000



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		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		10/100BASE-T

ORDERING INFORMATION

Designation	Type	Order No.
External frontend, from 36 GHz to 50 GHz	R&S®FE50DTR	1347.4099.02
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®SMM100A	R&S®SMM-B1007	1440.9109.02
External frontend control, for R&S®SMM100A	R&S®SMM-K553	1441.1147.02
Minimum needed frequency extension, for R&S®SMW200A	R&S®SMW-B1007	1428.7700.02
External frontend control, for R&S®SMW200A	R&S®SMW-K553	1414.6758.02

Warranty		
Base unit		3 years
All other items [1]		1 year
Service options		
Extended warranty, one year	R&S®WE1	Please contact your local Rohde&Schwarz sales office.
Extended warranty, two years	R&S®WE2	
Extended warranty with calibration coverage, one year	R&S®CW1	
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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R&S®FE50DTR External Frontend 36 GHz to 50 GHz
Data without tolerance limits is not binding | Subject to change
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