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

Specifications

Data Sheet
Version 07.00

ROHDE&SCHWARZ
Make ideas real

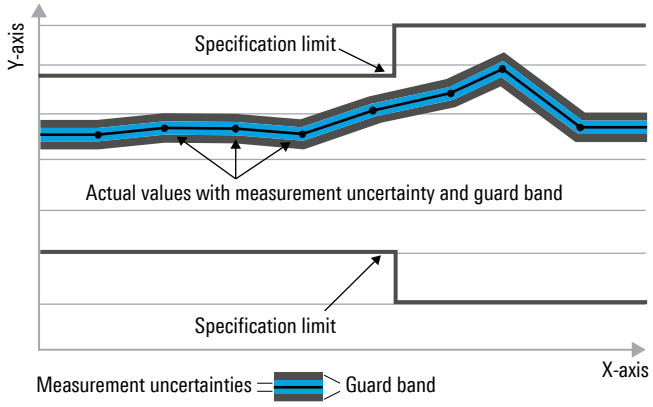
CONTENTS

Definitions

General
Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)
Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties
Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications for RX and TX mode

Frequency

RF frequency range	R&S®FE50DTR	36 GHz to 50 GHz

Reference frequency
This item is specified in the data sheet of the instrument which is used as input for the R&S®FE50DTR reference frequency.

LO source		
Mode	internal	internal synthesizer
	external	external signal generator or LO output of a further FE50DTR

Setting times		
Frequency change	≤ 10 MHz	< 10 ms (nom.)
	> 10 MHz	< 30 ms (nom.)

Specifications for RX mode

Unless otherwise noted, all specifications in this section are valid for:

- R&S®FE50DTR, in combination with R&S®FSW, R&S®FSVA3000 or R&S®FSV3000 base instrument
- 640 MHz reference signal from R&S®FSW, R&S®FSVA3000 or R&S®FSV3000 base instrument, LO mode internal
- +12 V power supply (see Accessories supplied)
- IF cable, SMA, length: 1 m (see Accessories supplied)
- Temperature range: +20 °C to +30 °C

Analysis bandwidth

Maximum signal analysis bandwidth (equalized)		
With R&S®FSW	base unit	28 MHz
	with R&S®FSW-B320 option	320 MHz
	with R&S®FSW-B512 option	512 MHz
	with R&S®FSW-B1200/-B2001/-B800R/ -B4001/-B6001/-B8001 options	1 GHz
With R&S®FSVA3000 and R&S®FSV3000	base unit	28 MHz
	with R&S®FSV3-B200 option	200 MHz
With R&S®FSVA3000	with R&S®FSV3-B400 option	400 MHz
	with R&S®FSV3-B1000 option	1 GHz
With R&S®RTP	with R&S®RTP-K11 and R&S®RTP-K121 options	1 GHz

Level

Setting range of RF attenuator		0 dB to 31 dB, in 1 dB steps

Maximum safe input level		
RF power	f > 100 MHz	
	RF attenuation = 0 dB	+18 dBm
	RF attenuation ≥ 7 dB	+25 dBm
	10 kHz ≤ f ≤ 100 MHz	0 dBm
	f < 10 kHz	does not apply
DC voltage		0 V

Intermodulation		
1 dB compression of input amplifier	RF attenuation = 0 dB	
	36 GHz ≤ f_{in} ≤ 50 GHz	> 0 dBm (nom.)
Third order intercept point (TOI)	RF attenuation = 0 dB, every tone 5 dB under reference level, Δf = 500 kHz, analysis bandwidth = 10 MHz, IF mode = auto	
	36 GHz ≤ f_{in} ≤ 50 GHz	> +12 dBm

Sensitivity

All noise level data in this section not marked as typical (typ.) or nominal (nom.) are specified values whose compliance is ensured by testing.

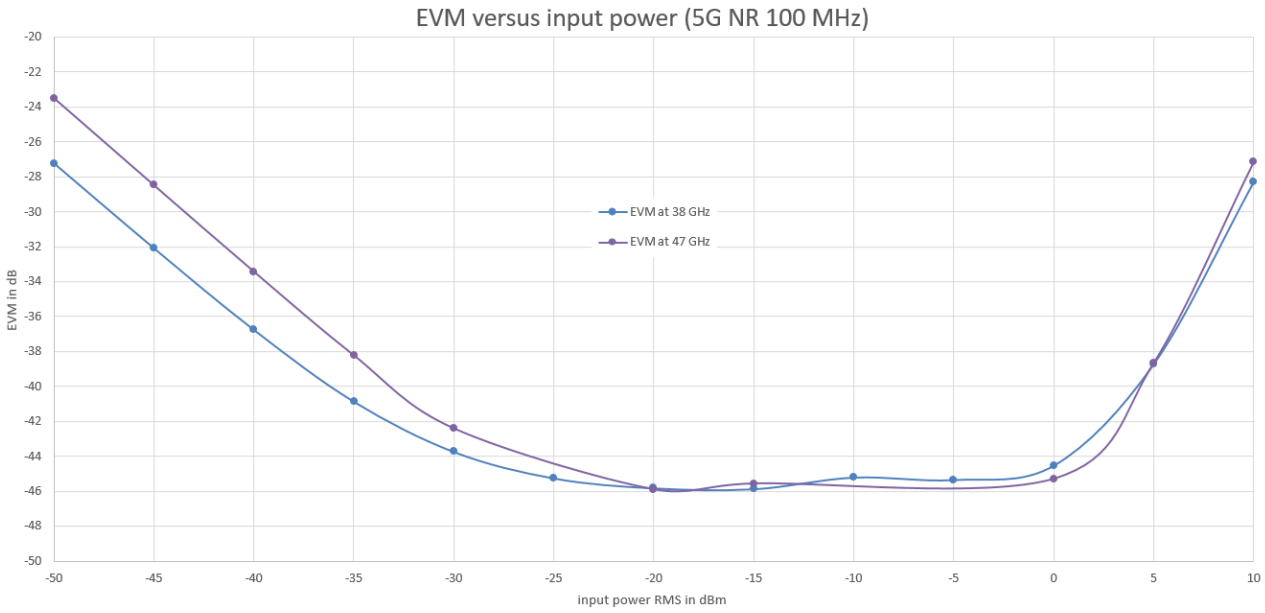
Displayed average noise level		
	RF attenuation = 0 dB, termination = 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, trace average 50, IF cable loss < 1 dB at I/Q analyzer center frequency, analysis bandwidth 10 MHz	
	36 GHz ≤ f ≤ 43 GHz	–155 dBm, –158 dBm (typ.)
	43 GHz < f ≤ 49 GHz	–150 dBm, –153 dBm (typ.)
	49 GHz < f ≤ 50 GHz	–145 dBm, –148 dBm (typ.)

Level measurement uncertainty

Level measurement uncertainty at center frequency	any RF attenuation, amplitude settings auto	
	36 GHz ≤ f ≤ 45 GHz	< 2.0 dB (σ = 0.67 dB)
	45 GHz < f ≤ 50 GHz	< 2.5 dB (σ = 0.83 dB)
RF attenuator switching uncertainty	referenced to 10 dB attenuation, f_{center} = 38 GHz	
	0 dB to 6 dB	< 0.4 dB (σ = 0.1 dB)
	7 dB to 31 dB	< 0.3 dB (σ = 0.1 dB)
	referenced to 10 dB attenuation, f_{center} = 49 GHz	
	0 dB to 6 dB	< 0.5 dB (σ = 0.1 dB)
	7 dB to 31 dB	< 0.3 dB (σ = 0.1 dB)
Amplitude flatness	RF attenuation = 10 dB, amplitude settings auto	
	analysis bandwidth ≤ 200 MHz	
	36 GHz ≤ f_{center} ≤ 45 GHz	±1.5 dB (nom.)
	45 GHz < f_{center} ≤ 50 GHz	±2.0 dB (nom.)
	analysis bandwidth ≤ 400 MHz	
	36 GHz ≤ f_{center} ≤ 45 GHz	±2.0 dB (nom.)
	45 GHz < f_{center} ≤ 50 GHz	±2.5 dB (nom.)
	analysis bandwidth ≤ 1 GHz	
	36.3 GHz ≤ f_{center} ≤ 45 GHz	±2.3 dB (nom.)
	45 GHz < f_{center} ≤ 49.7 GHz	±2.8 dB (nom.)
Deviation from linear phase	RF attenuation = 10 dB, amplitude settings auto	
	analysis bandwidth ≤ 400 MHz	
	36 GHz ≤ f_{center} ≤ 50 GHz	±10° (nom.)
	analysis bandwidth ≤ 1 GHz	
	36.3 GHz ≤ f_{center} ≤ 49.7 GHz	±13° (nom.)

Signal performance for digital standards

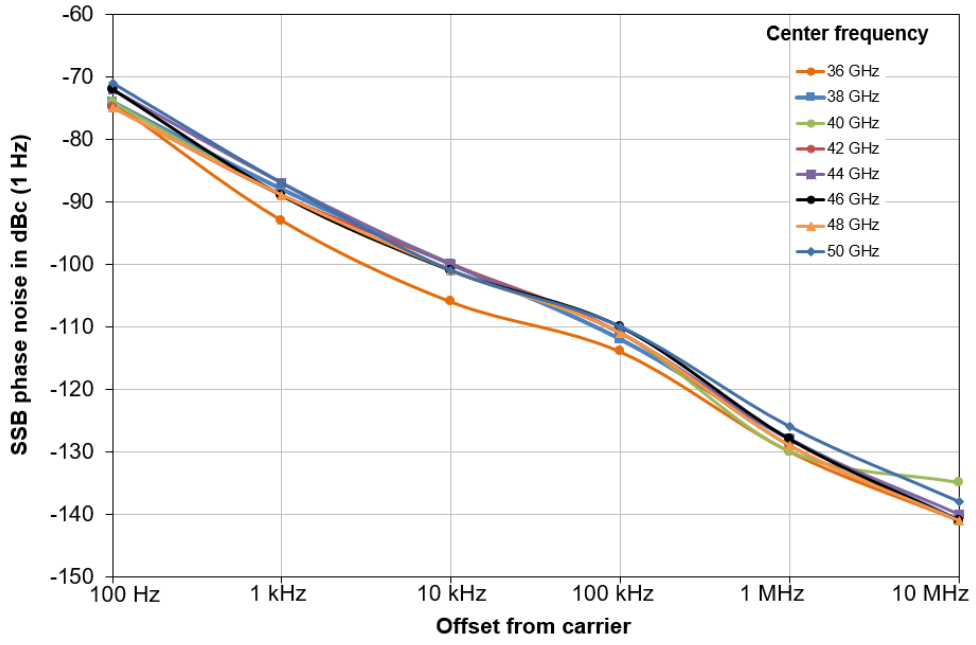
Residual EVM	5G NR signal, channel bandwidth: 100 MHz, full allocation, SCS: 60 kHz, modulation: 4QPSK, IF mode = low	
	37.5 GHz ≤ f_{in} ≤ 39.0 GHz	
	–29 dBm ≤ P_{in} (RMS) ≤ +0 dBm	< –44 dB (meas.)
	–35 dBm ≤ P_{in} (RMS) ≤ +4 dBm	< –40 dB (meas.)
	47.0 GHz ≤ f_{in} ≤ 49.0 GHz	
	–25 dBm ≤ P_{in} (RMS) ≤ +1 dBm	< –44 dB (meas.)
	–33 dBm ≤ P_{in} (RMS) ≤ +4 dBm	< –40 dB (meas.)



EVM values versus input power at different center frequencies in combination with an R&S®FSVA3000 (IF mode = low)

Spectral purity

Image response	f_{in} = f – 2 × (first IF), input level ≤ –10 dBm	
	IF mode = low, 3.4 GHz < (first IF) < 6.9 GHz	
	36 GHz ≤ f ≤ 40 GHz	< –90 dBc
	40 GHz < f ≤ 44 GHz	< –70 dBc
	44 GHz < f ≤ 50 GHz	< –50 dBc
	IF mode = high, 7.5 GHz < (first IF) < 8.8 GHz	
	36 GHz ≤ f ≤ 46 GHz	< –90 dBc
	46 GHz < f ≤ 50 GHz	< –75 dBc
	f = receive frequency	
Intermediate frequency response	input level ≤ –10 dBm	
	36 GHz ≤ f ≤ 50 GHz	< –70 dBc
	f = receive frequency	
Residual spurious response	RF attenuation = 0 dB, RF input termination = 50 Ω, analysis bandwidth ≤ 100 MHz	
	36 GHz ≤ f ≤ 50 GHz	< –100 dBm (nom.)
	f = receive frequency	
SSB phase noise	RF center frequency = 38 GHz, IF mode = low, measured with an R&S®FSVA3000 and R&S®FSV3-K40 phase noise measurement option on the used IF carrier offset	
	100 Hz	< –65 dBc (1 Hz)
	1 kHz	< –84 dBc (1 Hz)
	10 kHz	< –96 dBc (1 Hz)
	100 kHz	< –106 dBc (1 Hz)
	1 MHz	< –124 dBc (1 Hz)
	10 MHz	–137 dBc (1 Hz) (nom.)



Typical single side band phase noise at different center frequencies in combination with an R&S®FSVA3000 (IF mode = low)

Specifications for TX mode

Unless otherwise noted, all specifications in this section are valid for:

- R&S®FE50DTR in combination with R&S®SMW200A or R&S®SMM100A base instrument
- 1 GHz reference signal from R&S®SMW200A or R&S®SMM100A base instrument
- +12 V power supply (see Accessories supplied)
- IF cable, SMA, length: 1 m (see Accessories supplied)
- Temperature range: +20 °C to +30 °C

Modulation bandwidth

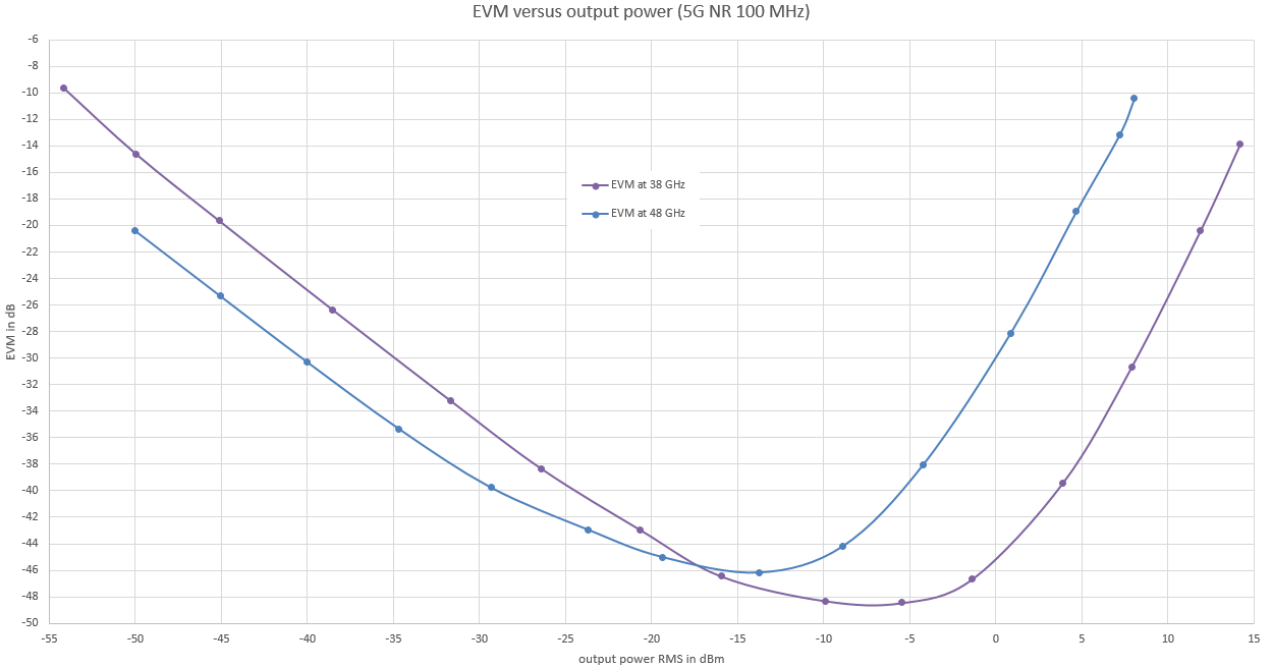
Maximum signal modulation bandwidth (equalized)	with R&S®SMW200A or R&S®SMM100A, depends on the installed bandwidth extensions of the used base instrument	max. 1 GHz

Level

Setting range		–145 dBm to +30 dBm
Specified level range	CW or I/Q modulated signals, coupled settings	
	36 GHz ≤ f_{out} ≤ 45 GHz	–50 dBm to +10 dBm (PEP)
	45 GHz < f_{out} ≤ 50 GHz	–50 dBm to +4 dBm (PEP)
Resolution of setting		0.1 dB (nom.)
Setting range of RF attenuator		0 dB to 31 dB, in 1 dB steps
Level error	CW signal, coupled settings, level range –30 dBm to 0 dBm	
	36 GHz ≤ f_{out} ≤ 45 GHz	< 2.0 dB
	45 GHz < f_{out} ≤ 50 GHz	< 2.5 dB
	I/Q modulated signal, level range –30 dBm to 0 dBm	
	36 GHz ≤ f_{out} ≤ 50 GHz	add 0.4 dB
	for any other level setting	
	36 GHz ≤ f_{out} ≤ 50 GHz	add 0.2 dB (nom.)
Amplitude flatness	with internal baseband I/Q (R&S®SMW-B13XT wideband baseband main module option), optimization mode: high quality	
	modulation bandwidth ≤ 200 MHz	
	36 GHz ≤ f_{out} ≤ 43 GHz	±1.5 dB (nom.)
	43 GHz < f_{out} ≤ 50 GHz	±2.0 dB (nom.)
	modulation bandwidth ≤ 400 MHz	
	36 GHz ≤ f_{out} ≤ 43 GHz	±2.0 dB (nom.)
	43 GHz < f_{out} ≤ 50 GHz	±2.5 dB (nom.)
	modulation bandwidth ≤ 1 GHz	
	36.5 GHz ≤ f_{out} ≤ 43 GHz	±2.3 dB (nom.)
	43 GHz < f_{out} ≤ 49.5 GHz	±2.8 dB (nom.)
Maximum rated reverse power	f > 100 MHz	+25 dBm
	10 kHz ≤ f ≤ 100 MHz	0 dBm
	f < 10 kHz	does not apply
Maximum permissible DC voltage		0 V

Signal performance for digital standards

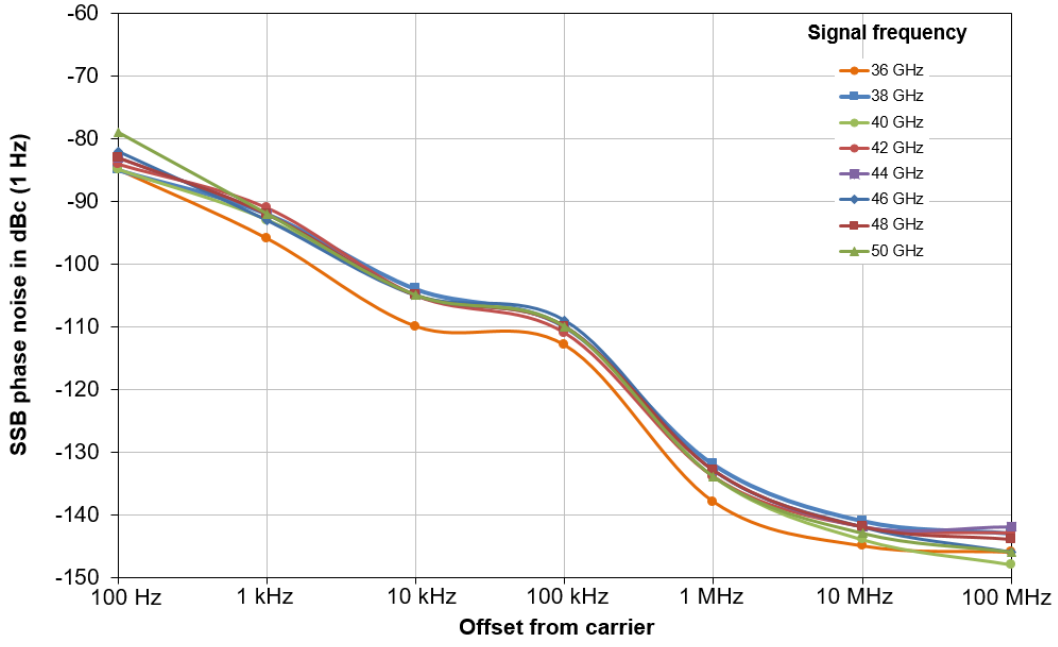
Residual EVM	5G NR signal, channel bandwidth: 100 MHz, full allocation, SCS: 60 kHz, modulation: 4QPSK, IF mode = low	
	37.5 GHz ≤ f_{in} ≤ 39.0 GHz	
	–17 dBm ≤ P_{out} (RMS) ≤ +0 dBm	< –44 dB (meas.)
	–22 dBm ≤ P_{out} (RMS) ≤ +3 dBm	< –40 dB (meas.)
	47.0 GHz ≤ f_{in} ≤ 49.0 GHz	
	–20 dBm ≤ P_{out} (RMS) ≤ -9 dBm	< –44 dB (meas.)
	–27 dBm ≤ P_{out} (RMS) ≤ -7 dBm	< –40 dB (meas.)



EVM values versus output power at different center frequencies in combination with an R&S®SMW200A (IF mode = low)

Spectral purity

Image suppression	–10 dBm CW output signal	
	IF mode = low	
	36 GHz ≤ f_{out} ≤ 39 GHz	< –70 dBc (nom.)
	39 GHz < f_{out} ≤ 41 GHz	< –60 dBc (nom.)
	41 GHz < f_{out} ≤ 45.5 GHz	< –60 dBc (nom.) [1]
	45.5 GHz < f_{out} ≤ 50 GHz	< –45 dBc (nom.)
	IF mode = high	
	36 GHz ≤ f_{out} ≤ 37.5 GHz	< –45 dBc (nom.)
	37.5 GHz < f_{out} ≤ 43 GHz	< –65 dBc (nom.)
	43 GHz < f_{out} ≤ 47 GHz	< –65 dBc (nom.) [1]
	47 GHz < f_{out} ≤ 50 GHz	< –65 dBc (nom.)
Wideband noise	–10 dBm CW output signal, IF mode = low carrier offset 1 GHz, measurement bandwidth = 1 Hz	
	36 GHz ≤ f_{out} ≤ 46 GHz	< –140 dBc (meas.)
	46 GHz < f_{out} ≤ 50 GHz	< –138 dBc (meas.)
LO suppression	–10 dBm CW output signal	
	IF mode = low	
	36 GHz ≤ f_{out} ≤ 38 GHz	< –55 dBc (nom.)
	38 GHz < f_{out} < 46.6 GHz	< –45 dBc (nom.) [1]
	46.6 GHz ≤ f_{out} ≤ 49.5 GHz	< –40 dBc (nom.)
	IF mode = high	
	36 GHz ≤ f_{out} ≤ 39 GHz	< –55 dBc (nom.)
	39 GHz ≤ f_{out} ≤ 41 GHz	< –40 dBc (nom.)
	41 GHz < f_{out} < 46.6 GHz	< –40 dBc (nom.) [1]
	46.6 GHz ≤ f_{out} ≤ 50 GHz	< –40 dBc (nom.)
Harmonics, subharmonics and other mixing products of the RF and LO signal	–10 dBm CW output signal, within modulation bandwidth	
	36 GHz ≤ f_{out} ≤ 50 GHz	< –70 dBc (meas.)
	–10 dBm CW output signal, observed frequency range from 0 Hz to 50 GHz	
	IF mode = low	
	36 GHz ≤ f_{out} ≤ 43 GHz	< –50 dBc (meas.)
	43 GHz < f_{out} ≤ 50 GHz	< –60 dBc (meas.)
	IF mode = high	
	36 GHz ≤ f_{out} ≤ 37 GHz	< –20 dBc (meas.)
	37 GHz < f_{out} ≤ 50 GHz	< –60 dBc (meas.)



Typical single side band phase noise at different center frequencies in combination with an R&S®SMW200A

[1] For R&S®FE50DTR with serial numbers ≥ 101501.

Inputs and outputs

RF input A		
Connector		1.85 mm female (compatible with 2.4 mm)
Impedance		50 Ω
VSWR RX, mode: active	36 GHz ≤ f ≤ 50 GHz	< 2.5, 1.8 [2] (typ.)

RF output B		
Connector		1.85 mm female (compatible with 2.4 mm)
Impedance		50 Ω
VSWR TX, mode: active	RF attenuation auto, 0 dBm CW output power, RF off	
	36 GHz ≤ f ≤ 50 GHz	2.2 [2] (typ.)

RF output B to RF input A		
Isolation	RF attenuation RX = 0 dB, 0 dBm CW output power, 50 Ω termination on both connectors, analysis bandwidth = 10 MHz, IF mode = auto	
	36 GHz ≤ f ≤ 50 GHz	> 90 dB (meas.) [3]

IF output A		
Connector		SMA female
Impedance		50 Ω (nom.)
Output frequency range	IF mode = low	
	depends on RF frequency	3.4 GHz to 6.9 GHz
	IF mode = high	
	depends on RF frequency	7.5 GHz to 8.8 GHz
Level		–40 dBm to 0 dBm

IF input B		
Connector		SMA female
Impedance		50 Ω (nom.)
Input frequency range	IF mode = low	
	depends on RF frequency	3.4 GHz to 6.9 GHz
	IF mode = high	
	depends on RF frequency	7.5 GHz to 8.8 GHz
Level		–40 dBm to +10 dBm

Reference input 10 MHz, 640 MHz, 1 GHz		
Connector		SMA female
Impedance		50 Ω (nom.)
Input frequency range		10 MHz, 640 MHz, 1 GHz
Required level		0 dBm to +20 dBm

LO input		
Connector		SMA female
Impedance		50 Ω (nom.)
Input frequency		8 GHz to 16.4 GHz
Level		+5 dBm to +20 dBm

LO output		
Connector		SMA female
Impedance		50 Ω (nom.)
Output frequency		8 GHz to 16.4 GHz
Level		+5 dBm to +20 dBm

Power supply		
Connector		2-pin LEMOSA
Supply voltage		+12 V DC, max. 2.5 A (nom.)

[2] Typical VSWR performance: performance expected to be met in 95 % of the cases with a confidence level of 95 %, temperature range from +20 °C to +30 °C. These values are not warranted and are subject to modification if a significant change in the statistical behavior of production instruments is observed.

[3] For R&S®FE50DTR with serial numbers ≥ 101447.

LAN interface		10BASE-T/100BASE-T
Connector		RJ-45 jack
PoE support		PoE++ (max. 52 W)

USB interface	for service use only	1 port, type B plug, version 2.0

General data

Temperature		
Temperature range	operating	+5 °C to +40 °C
	storage	–40 °C to +70 °C
Climatic loading		+40 °C at 95 % relative humidity, in line with EN 60068-2-30, without condensation

Altitude		
Maximum operating altitude	above sea level	4600 m (approx. 15100 ft)

Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz, displacement: 0.3 mm, constant amplitude (1.8 g at 55 Hz), in line with EN 60068-2-6
		55 Hz to 150 Hz, acceleration: 0.5 g constant, in line with EN 60068-2-6
	random	8 Hz to 500 Hz, acceleration 1.2 g (RMS), in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810G, method 516.6, procedure I

EMC		• IEC/EN 61326-1 [4, 5] • IEC/EN 61326-2-1 • CISPR 11/EN 55011 [4] • IEC/EN 61000-3-2 • IEC/EN 61000-3-3

Recommended calibration interval		1 year

External power supply		
DC output voltage range		+12 V
Maximum output current		5 A
Power consumption		max. 60 W
Safety		in line with IEC/UL/EN 60950-1/62368-1, CE, CB
Test marks		UL, GS, CE, FCC

Dimensions and weight		
Dimensions (nom.)	W × H × D (overall)	150 mm × 80 mm × 175 mm (5.90 in × 3.15 in × 6.88 in)
Net weight (nom.)		1.6 kg (3.53 lb)

[4] Emission limits for class A equipment applied.

[5] Immunity test requirement for industrial environment (EN 61326 table 2).

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, two IF cables, SMA, length: 1 m, reference cable, SMA, length: 2 m		

Recommended extras

Designation	Type	Order No.
IF cable	R&S®ZV-Z193	1306.4520.36
Torque wrench for 3.5/2.92/2.4/1.85 mm connectors, 0.9 Nm coupling torque	R&S®ZN-ZTW	1328.8534.35
Height adjustment for external frontends	R&S®ZZA-FE02	1348.6550.02
LANCOM PoE++ injector (compatible with IEEE standard 802.3af/at/bt; up to 100 m distance)		4044144617799 (LANCOM order number)

Supported base instruments

Designation	Type	Order No.
Signal and spectrum analyzers		
R&S®FSW		
Signal and spectrum analyzer, 2 Hz to 8 GHz	R&S®FSW8	1331.5003.08
Signal and spectrum analyzer, 2 Hz to 13.6 GHz	R&S®FSW13	1331.5003.13
Signal and spectrum analyzer, 2 Hz to 26.5 GHz	R&S®FSW26	1331.5003.26
Signal and spectrum analyzer, 2 Hz to 43.5 GHz	R&S®FSW43	1331.5003.43
Signal and spectrum analyzer, 2 Hz to 50 GHz	R&S®FSW50	1331.5003.50
Signal and spectrum analyzer, 2 Hz to 67 GHz	R&S®FSW67	1331.5003.67
Signal and spectrum analyzer, 2 Hz to 85 GHz	R&S®FSW85	1331.5003.85
R&S®FSVA3000, R&S®FSV3000		
Signal and spectrum analyzer, 10 Hz to 7.5 GHz	R&S®FSVA3007	1331.5003.08
Signal and spectrum analyzer, 10 Hz to 13.6 GHz	R&S®FSVA3013	1331.5003.14
Signal and spectrum analyzer, 10 Hz to 30 GHz	R&S®FSVA3030	1331.5003.31
Signal and spectrum analyzer, 10 Hz to 44 GHz	R&S®FSVA3044	1331.5003.44
Signal and spectrum analyzer, 10 Hz to 7.5 GHz	R&S®FSV3007	1330.5000.07
Signal and spectrum analyzer, 10 Hz to 13.6 GHz	R&S®FSV3013	1330.5000.13
Signal and spectrum analyzer, 10 Hz to 30 GHz	R&S®FSV3030	1330.5000.30
Signal and spectrum analyzer, 10 Hz to 44 GHz	R&S®FSV3044	1330.5000.43
Vector signal generators		
Vector signal generator	R&S®SMW200A	1412.0000.02
Vector signal generator	R&S®SMM100A	1440.8002.02
Oscilloscopes		
R&S®RTP		
High-performance oscilloscope, 8 GHz, 100 Mpoints memory	R&S®RTP084B	1803.7000.08
High-performance oscilloscope, 13 GHz, 100 Mpoints memory	R&S®RTP134B	1803.7000.13
High-performance oscilloscope, 16 GHz, 100 Mpoints memory	R&S®RTP164B	1803.7000.16

Options needed for the base instrument

Designation	Type	Order No.
Signal and spectrum analyzers		
External frontend control, for R&S®FSW	R&S®FSW-K553	1350.6118.02
External frontend control, for R&S®FSVA3000/R&S®FSV3000	R&S®FSV3-K553	1346.4889.02
Vector signal generators		
Minimum needed frequency extension, for R&S®SMW200A [6]	R&S®SMW-B1007	1428.7700.02
External frontend control, for R&S®SMW200A	R&S®SMW-K553	1414.6758.02
Minimum needed frequency extension, for R&S®SMM100A [6]	R&S®SMM-B1007	1440.9109.02
External frontend control, for R&S®SMM100A	R&S®SMM-K553	1441.1147.02
Oscilloscopes		
External frontend control	R&S®RTP-K553	1803.6890.02
I/Q software interface	R&S®RTP-K11	1800.6683.02
Deembedding base option	R&S®RTP-K121	1326.3064.02

Service options

Warranty		
Base unit		3 years
All other items [7]		1 year
Service options		
Extended warranty, one year	R&S®WE1	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 a term of one and two years (WE1 and WE2)
Repairs carried out during the contract term are free of charge [8]. Necessary calibration and adjustments carried out during repairs are also covered.

Extended warranty with calibration coverage (CW1 and CW2)
Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs [8] and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

[6] R&S®SMW-B1006 respectively R&S®SMM-B1006 options are supported, but with an RF frequency gap between 42 GHz and 46.5 GHz.

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

[8] Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

Service at Rohde&Schwarz
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- ► Local and personalized
- ► Customized and flexible
- ► Uncompromising quality
- ► Long-term dependability

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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

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PD 3609.5551.22 | Version 07.00 | July 2023 (st)
R&S®FE50DTR External Frontend 36 GHz to 50 GHz
Data without tolerance limits is not binding | Subject to change

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