

**ROHDE & SCHWARZ**

Make ideas real



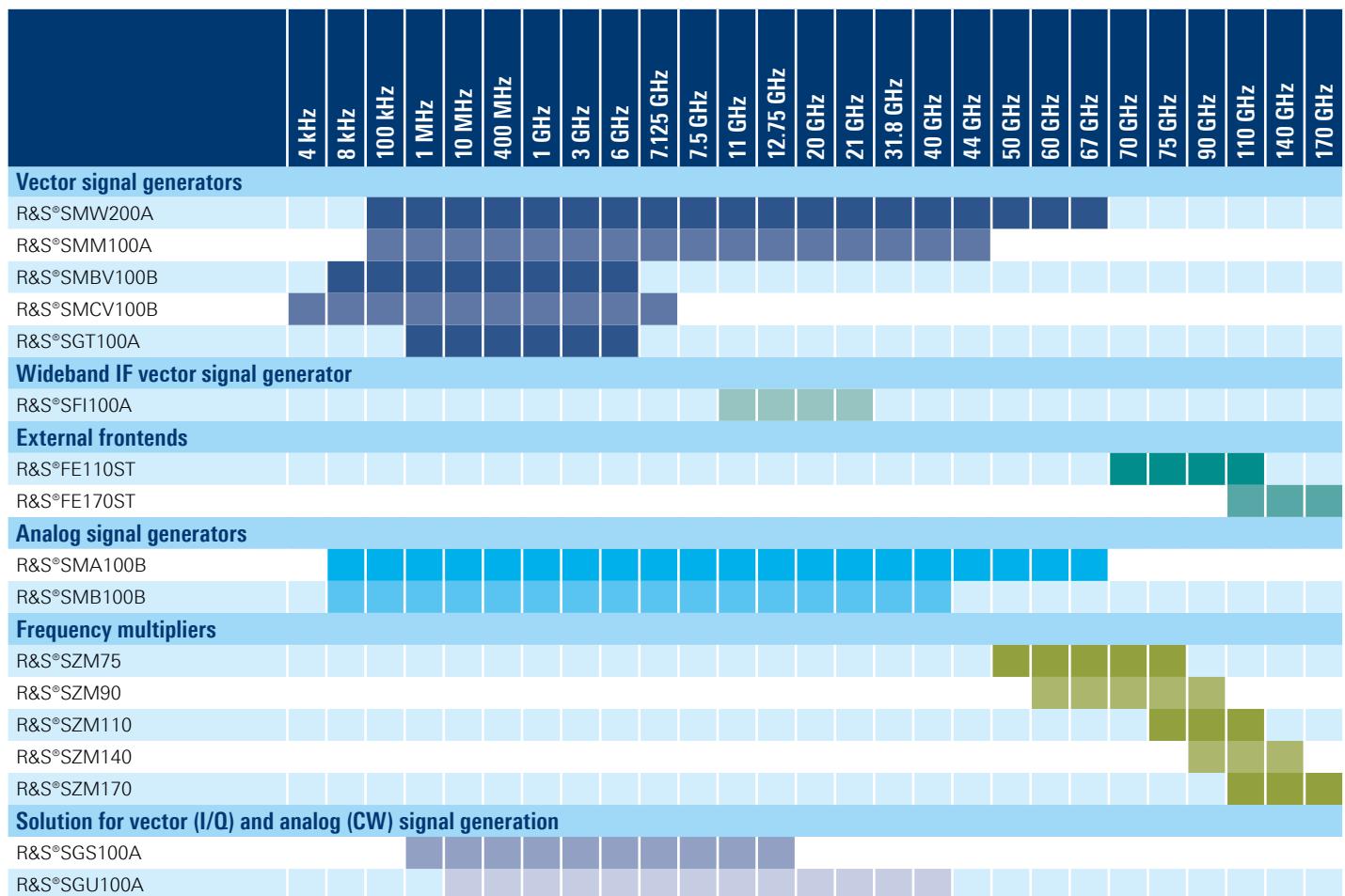
# SIGNAL GENERATOR PORTFOLIO

Including external frontends and frequency multipliers

Flyer | Version 05.00



# FREQUENCY COVERAGE FOR ROHDE & SCHWARZ SIGNAL GENERATORS, EXTERNAL FRONTENDS AND FREQUENCY MULTIPLIERS



# SIGNAL GENERATOR PORTFOLIO

The Rohde & Schwarz signal generator portfolio ranges from ultra compact, uniquely fast analog and vector signal sources for production and automated test environments to industry-leading analog and vector signal generators for R&D in the telecommunications, A&D and semiconductor sectors.

## Vector signal generators

Rohde & Schwarz leverages decades of test and measurement excellence for a broad portfolio of RF vector signal generators that support a broad range of digital standards. Our solutions range from the top-performance models that can handle the most demanding signal generation to mid-range models with remarkably good RF characteristics and

compact solutions. A common feature of the different models is high-performance, flexibility and suitability to many applications. Whether development verification and testing in wireless communications, GNSS or mmWave applications, we have the right solution for you.

## Analog signal generators

Our analog signal generator portfolio covers the wide range of RF, microwave and mmWave frequencies. Our analog signal generators have outstanding signal purity and performance as well as functional solutions; both in the high end

or midrange. The solutions are ideal for RF semiconductor, wireless communications, aerospace and defense industries for development, production and service.



	Vector signal generators						Solution for vector (I/Q) and analog (CW) signal generation	Wideband IF vector signal generator	Analog signal generators	
	R&S®SMW200A	R&S®SMM100A	R&S®SMBV100B	R&S®SMCV100B	R&S®SGT100A	R&S®SGS100A/SGU100A	R&S®SFI100A	R&S®SMA100B	R&S®SMB100B	
Performance	• • •	• •	• •	•	•	•	• • •	• • •	• •	
Main features	<ul style="list-style-type: none"> <li>Integrated fading simulator</li> <li>Second RF path</li> <li>High-performance synchronization of multiple instruments</li> </ul>	<ul style="list-style-type: none"> <li>Very good RF performance</li> <li>Cost-efficient mmWave solution</li> </ul>	<ul style="list-style-type: none"> <li>Ultra high output power</li> <li>Excellent EVM and ACPR performance</li> </ul>	<ul style="list-style-type: none"> <li>Good RF performance</li> <li>High output power</li> <li>RF DAC design</li> </ul>	<ul style="list-style-type: none"> <li>Fastest frequency and level switching</li> <li>Smallest standalone vector signal generator</li> </ul>	<ul style="list-style-type: none"> <li>Very good RF performance up into the microwave range</li> <li>Cost-efficient, compact frequency extensions</li> </ul>	<ul style="list-style-type: none"> <li>Wideband single-ended, differential and direct DAC analog I/Q signals</li> <li>Perfect IF source for R&amp;S®FE110ST and R&amp;S®FE170ST</li> </ul>	<ul style="list-style-type: none"> <li>Excellent SSB phase noise</li> <li>Ultra high output power</li> <li>2 or 3 height units (HU)</li> </ul>	<ul style="list-style-type: none"> <li>Very low SSB phase noise</li> <li>Very high output power</li> </ul>	
Frequency range	100 kHz to 3/6/7.5/12.75/20/31.8/40/44/56/67 GHz, 72 GHz (overrange)	100 kHz to 6/7.5/12.75/20/31.8/44 GHz	8 kHz to 3 GHz/6 GHz	4 kHz to 3/6/7.125 GHz	1 MHz to 3 GHz/6 GHz	R&S®SGS100A RF source: 1 MHz to 6 GHz/12.75 GHz, with R&S®SGU100A upconverter: 10 MHz to 20 GHz/40 GHz	11 GHz to 21 GHz	8 kHz to 3/6/12.75/20/31.8/40/50/67 GHz	RF model: 8 kHz to 1/3/6 GHz Microwave model: 8 kHz to 12.75/20/31.8/40 GHz	
I/Q modulation bandwidth <sup>1)</sup>	up to 2 GHz (internal/external)	up to 1 GHz (internal), up to 2 GHz (external)	up to 1 GHz (internal), up to 2 GHz (external)	up to 240 MHz (internal)	up to 240 MHz (internal), up to 1 GHz (external)	up to 2 GHz (external)	RF modulation bandwidth: up to 10 GHz (with R&S®SFI-K530 option)	–	–	
Peak envelope power (PEP) (at 1 GHz/10 GHz) <sup>1)</sup>	+18 dBm/+18 dBm	+18 dBm/+18 dBm	+25 dBm/n.a.	+20 dBm/n.a.	+17 dBm/n.a.	+15 dBm/+15 dBm	n.a./0 dBm	+30 dBm/+27 dBm	+26 dBm/+20 dBm	
SSB phase noise (at 1 GHz <sup>1)</sup> , 1 Hz measurement bandwidth, 20 kHz carrier offset)	< -144 dBc	< -139 dBc	< -126 dBc	< -125 dBc	< -126 dBc	< -126 dBc	< -120 dBc (at 20 GHz)	< -147 dBc	< -126 dBc	
Harmonics (at 1 GHz) <sup>1)</sup>	< -30 dBc (level < +10 dBm); < -55 dBc (f > 3.5 GHz)	< -30 dBc (level < +10 dBm); < -55 dBc (f > 3.5 GHz)	< -30 dBc (level < +13 dBm)	< -30 dBc (level < +13 dBm)	< -30 dBc (level < +8 dBm)	< -30 dBc (level < +8 dBm, f > 12 GHz)	< -30 dBc (11 GHz < f < 21 GHz, CW, level < 0 dBm)	< -60 dBc (level = +18 dBm)	1 GHz to 6 GHz: -30 dBc (level < +13 dBm) 12 GHz to 40 GHz: < -55 dBc (level = +10 dBm)	
Nonharmonics (at 1 GHz <sup>1)</sup> , > 10 kHz carrier offset)	< -90 dBc (level > -10 dBm)	< -80 dBc (level > -10 dBm)	< -76 dBc (level > +10 dBm)	< -52 dBc, -60 dBc (typ.) (level > +10 dBm)	< -76 dBc (level > -10 dBm)	< -56 dBc (meas.) (level > -10 dBm, 12 GHz < f < 20 GHz)	< -40 dBc (11 GHz < f < 21 GHz, CW, level = -10 dBm)	< -100 dBc (level = +10 dBm)	< -82 dBc (level > +10 dBm)	
Software compatibility	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> <li>R&amp;S®Pulse Sequencer Software</li> <li>R&amp;S®RF Ports Alignment Software</li> <li>R&amp;S®ARB Toolbox</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> <li>R&amp;S®Pulse Sequencer Software</li> <li>R&amp;S®RF Ports Alignment Software</li> <li>R&amp;S®ARB Toolbox</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> <li>R&amp;S®Pulse Sequencer Software</li> <li>R&amp;S®ARB Toolbox</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> <li>R&amp;S®ARB Toolbox</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> <li>R&amp;S®Pulse Sequencer Software</li> <li>R&amp;S®ARB Toolbox</li> </ul>	–	<ul style="list-style-type: none"> <li>R&amp;S®WinIQSIM2 simulation software</li> </ul>	–	–	
Dimensions (W x H x D)	435 mm x 192 mm x 460 mm (17.1 in x 7.6 in x 18.1 in)	435 mm x 192 mm x 460 mm (17.1 in x 7.6 in x 18.1 in)	344 mm x 153 mm x 372 mm (13.5 in x 6.0 in x 14.6 in)	222 mm x 97 mm x 366 mm (8.7 in x 3.8 in x 14.4 in)	246 mm x 52.5 mm x 401 mm (9.7 in x 2.1 in x 15.8 in)	250 mm x 105 mm x 401 mm (9.8 in x 4.1 in x 15.8 in)	445 mm x 85 mm x 412 mm (17.5 in x 3.4 in x 16.2 in)	2 HU model: 460 mm x 107 mm x 503 mm (18.1 in x 4.2 in x 19.8 in) 3 HU model: 460 mm x 151 mm x 503 mm (18.1 in x 6.0 in x 19.8 in)	RF model: 344 mm x 108 mm x 732 mm (13.6 in x 4.3 in x 14.7 in) Microwave model: 460 mm x 107 mm x 503 mm (18.1 in x 4.21 in x 19.8 in)	

### Obsolete instrument compatibility

R&S®LegacyPro addresses code compatibility when replacing obsolete instruments with state-of-the-art successors. Follow the link for more details and check the list of specific legacy test equipment that can be emulated in the R&S®LegacyPro brochure (PD 5214.5603.62).

[www.rohde-schwarz.com/legacy\\_pro](http://www.rohde-schwarz.com/legacy_pro)

• The higher the number of points (maximum three points), the better the performance.

<sup>1)</sup> If not otherwise stated.

All values are specified.

# FREQUENCY MULTIPLIERS

R&S®SZM frequency multipliers combine easy handling and precise output levels in the frequency range from 50 GHz to 170 GHz. They can be used for automotive radars, for sophisticated telescopes in astronomy and for analyzing the earth's surface in radar interferometry.



Frequency multipliers					
	R&S®SZM75	R&S®SZM90	R&S®SZM110	R&S®SZM140	R&S®SZM170
<b>USB control</b>	with R&S®SMA100B (R&S®SMAB-K554 option required)				
<b>Main features</b>	<ul style="list-style-type: none"><li>► Wide frequency range</li><li>► Wide dynamic range</li><li>► Easy and convenient handling</li><li>► High signal quality</li></ul>				
<b>Input frequency range</b>	12.50 GHz to 18.75 GHz	15.00 GHz to 22.50 GHz	18.75 GHz to 27.50 GHz	15.00 GHz to 23.33 GHz	13.75 GHz to 21.25 GHz
<b>Output frequency range</b>	50 GHz to 75 GHz	60 GHz to 90 GHz	75 GHz to 110 GHz	90 GHz to 140 GHz	110 GHz to 170 GHz
<b>Input level</b>	+7 dBm (typ.)				
<b>Maximum output level</b>	+22 dBm (typ.)	+18 dBm (typ.)	+15 dBm (typ.)	+10 dBm (typ.)	+8 dBm (typ.)
<b>Maximum attenuation</b>					
With mechanically controlled attenuator	< 40 dB				
With electronically controlled attenuator	15 dB, if installed once; 30 dB, if installed twice		–	–	
<b>Connectors</b>					
Input	2.92 mm, female				
Waveguide output	WR15	WR12	WM-2540 (WR10)	WM-2032 (WR8)	WM-1651 (WR6.5)
<b>Dimensions (W × H × D)<sup>1)</sup></b>	90 mm × 60 mm × 180 mm (3.5 in × 2.4 in × 7.1 in)				

<sup>1)</sup> Without feet, feet-mount, test port adapter (TPA) and rear connectors.

# EXTERNAL FRONTENDS

R&S®SMW200A, R&S®SMM100A and R&S®SFI100A vector signal generators, the FSW signal and spectrum analyzer and the R&S®RTP high-performance oscilloscope can easily have their frequency range extended to 110 GHz or 175 GHz for signal generation with R&S®FE110ST/R&S®FE170ST external TX frontends and for wideband signal analysis with R&S®FE110SR/R&S®FE170SR external RX frontends. The frontends come fully calibrated, can be extended with smart accessories and require a minimum number of connections to the base instruments, simplifying operation.



	External frontends			
	R&S®FE110ST	R&S®FE110SR	R&S®FE170ST	R&S®FE170SR
<b>Compatible with</b>	R&S®SMW200A, R&S®SMM100A, R&S®SFI100A	FSW, R&S®RTP	R&S®SMW200A, R&S®SMM100A, R&S®SFI100A	FSW, R&S®RTP
<b>Main features</b>	<ul style="list-style-type: none"> <li>► High-fidelity signal generation and analysis with minimal EVM</li> <li>► Fully calibrated and automated solution</li> <li>► User-friendly operation</li> </ul>			
<b>Frequency range</b>	70 GHz to 110 GHz	70 GHz to 110 GHz	110 GHz to 170 GHz, 175 GHz (overrange)	110 GHz to 170 GHz, 175 GHz (overrange)
<b>Signal analysis bandwidth (equalized)</b>	–	with FSW: max. 8.3 GHz, with R&S®RTP: max. 10 GHz	–	with FSW: max. 8.3 GHz, with R&S®RTP: max. 10 GHz
<b>Sensitivity</b>	–	75 GHz $\leq$ f $\leq$ 98 GHz: –158 dBm (typ.)	–	115 GHz $<$ f $\leq$ 148 GHz: –159 dBm (typ.)
<b>Maximum safe input level</b>	–	RF attenuation $\geq$ 25 dB: +20 dBm	–	RF attenuation $\geq$ 27 dB: +20 dBm
<b>Modulation bandwidth (equalized)</b>				
With R&S®SMM100A	max. 1 GHz	–	max. 1 GHz	–
With R&S®SMW200A	max. 2 GHz	–	max. 2 GHz	–
With dual-channel R&S®SMW200A and R&S®SMW-K555 options	max. 4 GHz	–	max. 4 GHz	–
With R&S®SFI100A and R&S®SFI-K530 option	max. 10 GHz	–	max. 10 GHz	–
<b>Specified level range (PEP)</b>	–40 dBm to +5 dBm	–	–40 dBm to –15 dBm	–
<b>Phase noise</b>	–128 dBc (1 Hz) <sup>1)</sup>	–	–122 dBc (1 Hz) <sup>2)</sup>	–
<b>Dimensions (W x H x D), overall</b>	150 mm $\times$ 57 mm $\times$ 190 mm (5.90 in $\times$ 2.24 in $\times$ 7.48 in)			

<sup>1)</sup> Phase noise at 1 MHz offset, RF center frequency = 96.6 GHz.

<sup>2)</sup> Phase noise at 1 MHz offset, RF center frequency = 148 GHz.

## 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 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.

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

### Service at Rohde & Schwarz

#### You're in great hands

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

### 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

[www.training.rohde-schwarz.com](http://www.training.rohde-schwarz.com)

### Rohde & Schwarz customer support

[www.rohde-schwarz.com/support](http://www.rohde-schwarz.com/support)



R&S® is a registered trademark of Rohde & Schwarz

Trade names are trademarks of the owners

PD 3607.9837.32 | Version 05.00 | October 2024 (jr)

Signal generator portfolio

Data without tolerance limits is not binding | Subject to change

© 2019 - 2024 Rohde & Schwarz | 81671 Munich, Germany