

Competitive Comparison

Signal Analyzers: Keysight EXA vs. Rohde & Schwarz FSV

Keysight N9010B EXA signal analyzer at a glance

Superior capabilities

- Multi-touch user interface
- Sensitivity
- Noise cancellation
- Sweep time
- Noise figure uncertainty

Ready-to-use software

- Simplified measurement routines
- Pass/fail tests, characterization, or troubleshooting
- Parametric to standards-compliant
- Download free software trial www.keysight.com/find/free_trials

Future-ready

- Field-upgradeable
- Upgrade CPU, memory, drives

Consistent framework

- Same UI across all X-series
- Same programming commands

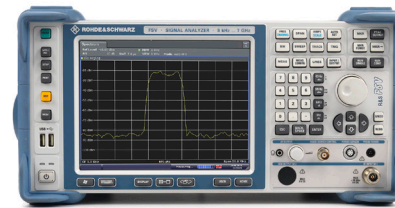
Advanced accessories

- Smart pre-amplifier to 50 GHz
- Smart noise source (SNS)

The EXA signal analyzer is your first, best choice when you need maximum value in signal analysis up to millimeter-wave frequencies. It helps you find the answer faster, whether you're seeking tighter design margins or shorter test times.

The ability to make accurate measurements in noise, without compromising time and budget constraints, is increasingly vital because if you don't, your results and design could be flawed. To avoid these risks, it is imperative that you use a signal analyzer capable of ensuring quick and accurate measurements in noise.

Rohde & Schwarz FSV



Keysight N9010B EXA



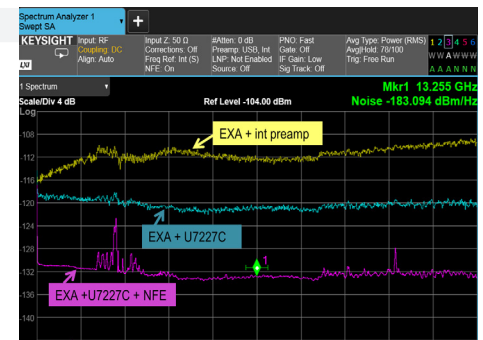
Specifications	Rohde & Schwarz FSV ²		Keysight N9010B EXA ¹	
Frequency range	10 Hz to 4, 7, 13.6, 30, 40 GHz	X	10 Hz to 3.6, 7, 13.6, 26.5, 32, 44 GHz	✓
Resolution bandwidth (RBW)	1 Hz to 10 MHz (28 settings)	X	1 Hz to 8 MHz (173 settings)	✓
Video bandwidth (VBW)	Same as RBW and 20/28/40 MHz	X	Same as RBW and 50 MHz	✓
Analysis BW	10/28/40/160 MHz only spec below 7 GHz	✓	10/25/40 MHz spec up to 44 GHz	X
Frequency points	101 to 32,001	X	1 to 100,001	✓
Amp. accuracy (<3.6 GHz, 95%)	±0.28 dB	-	±0.27 dB	-
Phase noise at 10 kHz offset (500 MHz/1 GHz)	-106 dBc/Hz	X	-107 dBc/Hz	✓
Total attenuator range	0 to 75 dB in 1 dB steps	X	0 to 84 dB in 1 dB steps	✓
Input voltage standing wave ratio (VSWR 40 GHz/44 GHz)	3.0	X	1.8	✓
Memory length	200 MSamples	X	536 Msamples	✓
Multi-touch pinch/zoom UI	No	X	Yes	✓

1. This information is subject to change without notice. For more information on EXA specifications, see the data sheet: <http://literature.cdn.keysight.com/litweb/pdf/5992-1256EN.pdf>.

2. The Rohde & Schwarz FSV specifications source is the R&S®FSV Signal and Spectrum Analyzer Specifications Data Sheet, version 12.01, dated August 2017. Specifications not found in Rohde & Schwarz literature were measured by Keysight engineers using a Rohde & Schwarz FSV.

Sensitivity and noise cancellation

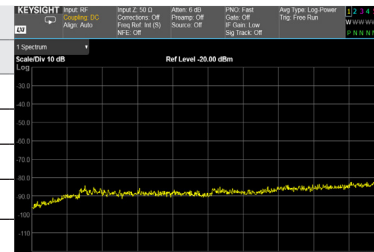
	Rohde & Schwarz FSV ¹		Keysight EXA	
Sensitivity	No USB pre-amp available	X	The EXA + smart preamplifier provides excellent sensitivity for spurious test so that you can achieve kTB noise floor and beyond. The EXA with U7227A/C/F USB preamplifier provides: <ul style="list-style-type: none"> - Gain correction - Temperature compensation - Improved DANL and accuracy - Cal data auto-download 	✓
Noise cancellation	FSV noise cancellation technique requires an additional step where the analyzer re-measures its own noise power contribution every time the analyzer configuration (frequency center/span, attenuator/ input range, resolution bandwidth) is changed.	X	Keysight's unique Noise Floor Extension (NFE) reduces noise floor over 8 dB and provides real-time noise floor subtraction.	✓



The EXA with a Keysight USB preamplifier offers excellent sensitivity for spurious test. Get even more sensitivity by adding Noise Floor Extension.

Sweep time comparison (sec) across 26.5 GHz span

	Rohde & Schwarz FSV ¹		Keysight EXA
RBW			
1 kHz	2650	X	538
3 kHz	295	X	60.3
10 kHz	26.5	X	5.6
30 kHz	2.95	X	0.717
1 MHz	0.08	X	0.066



With Keysight's new digital filter technology, sweeping a full 26.5 GHz frequency range using a 30 kHz RBW filter takes only 717 ms.

Noise figure uncertainty²

	Rohde & Schwarz FSV ¹		Keysight EXA	
Excess noise ratio (ENR) uncertainty represents over 60% of total. Example: NF = 3 dB, Gain = 26 dB, 6 GHz.				
Noise source	FSV + Competitor SNS		EXA + N4000 SNS/EXA + 346B SNS	
ENR ± dB	0.18	X	0.087/0.139	✓
DUT noise figure uncertainty	3 dB ±0.224	X	3 dB ±0.113/3 dB ±0.157	✓



Keysight offers a smart noise source, such as the N4000A SNS, capable of dramatically improving noise figure uncertainty and Rohde and Schwarz does not.

The EXA with a smart noise source (SNS) provides:

- ENR uncertainty < 0.1 dB
- Temperature compensation
- Plug in and go, no cal required
- User cal optional (with NFE)
- ENR data auto downloaded



1. The Rohde & Schwarz FSV specifications source is the R&S@FSV Signal and Spectrum Analyzer Specifications Data Sheet, version 12.01, dated August 2017. Specifications not found in Rohde & Schwarz literature were measured by Keysight engineers using a Rohde & Schwarz FSV.
2. For more information on noise figure uncertainty information, please see our [Noise Figure Uncertainty Calculator](#).