

R&S®FS-SNS SMART NOISE SOURCES

For easy and accurate noise figure measurements

R&S®FS-SNS18, 10 MHz to 18 GHz
R&S®FS-SNS26, 10 MHz to 26.5 GHz
R&S®FS-SNS40, 100 MHz to 40 GHz
R&S®FS-SNS55, 100 MHz to 55 GHz
R&S®FS-SNS67, 100 MHz to 67 GHz
R&S®FS-SNS90, 60 GHz to 90 GHz
R&S®FS-SNS110, 75 GHz to 110 GHz



Product Brochure
Version 04.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The R&S®FS-SNS smart noise sources enable simple and accurate noise figure and gain measurements by automatically loading all necessary setup parameters and taking the environmental temperature into account. Measurement uncertainty is calculated automatically and can even be displayed on the result screen.

Key facts

- ▶ Frequency range up to 18/26.5/40/55/67/90/110 GHz
- ▶ Supported by the R&S®FSW, R&S®FSV3000, R&S®FSVA3000, R&S®FPS, R&S®FPL1000 signal and spectrum analyzers, the R&S®FSWP phase noise analyzer and VCO tester, the R&S®FSMR3000 measuring receiver and the R&S®ZNL vector network analyzer
- ▶ Automatic loading of ENR table
- ▶ ENR uncertainty and reflection coefficients table for automatic uncertainty calculation
- ▶ Automatic temperature readout for improved accuracy

Noise figure and gain measurement

To perform noise figure and gain measurements with a spectrum analyzer, an excess noise ratio (ENR) source is needed that adds a well-defined (and ideally “white”) noise to the input of the DUT. The Y factor is the ratio of the noise power at the output of the DUT with and without this added noise. It forms the basis for calculating the amount of noise contributed by the DUT and its resulting noise figure and gain.

R&S®FS-SNS for simple and accurate noise figure and gain measurements



Although the characteristics of the output signal of a noise source in the specified frequency range comes close to white noise, it still has a slight frequency response and temperature dependency. To eliminate this deviation from ideal behavior, noise sources come with written tables that indicate the ENR behavior of the noise source with respect to frequency and temperature. These correction values must be manually transferred to the noise figure measurement software.

The R&S®FS-SNS smart noise sources eliminate this time consuming and error prone activity by providing the ENR tables and environmental temperature to the spectrum analyzer in electronic format.

The R&S®FS-SNS smart noise sources are connected to the analyzer via a 7-pin cable for power supply and control interface. An adapter cable is supplied for instruments not equipped with the necessary connector. When connected to a spectrum analyzer equipped with the application firmware R&S®FSx-K30 noise figure measurements (Fig. 1), the instrument handles all needed parameters automatically (Fig. 2).

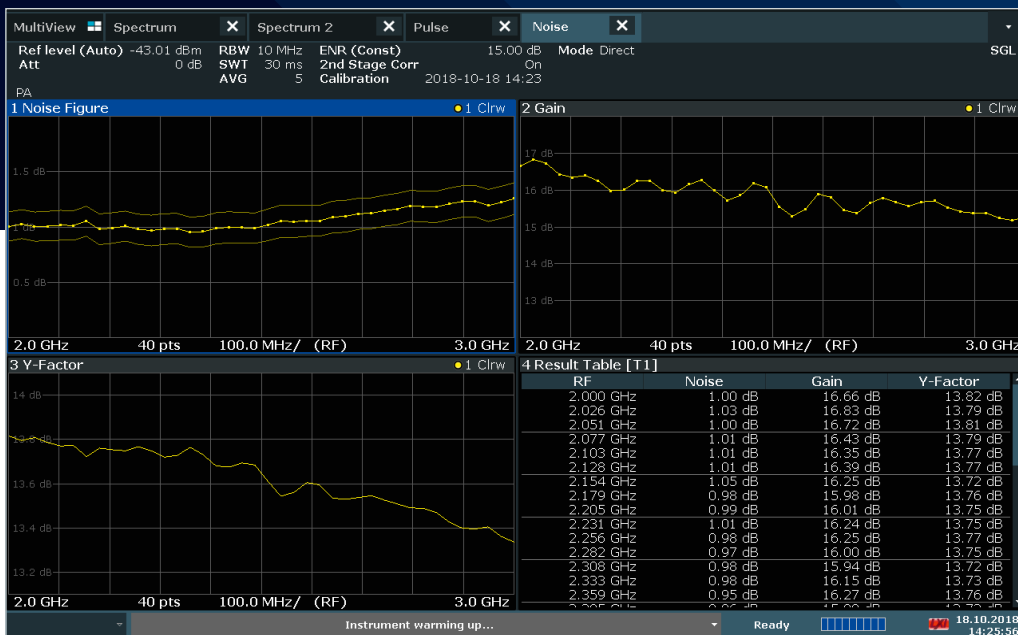


Fig. 1: Noise figure and gain measurement with R&S®FSx-K30 application firmware. In addition to the result table, the noise figure traces and the calculated gain, the Y factor can also be displayed.

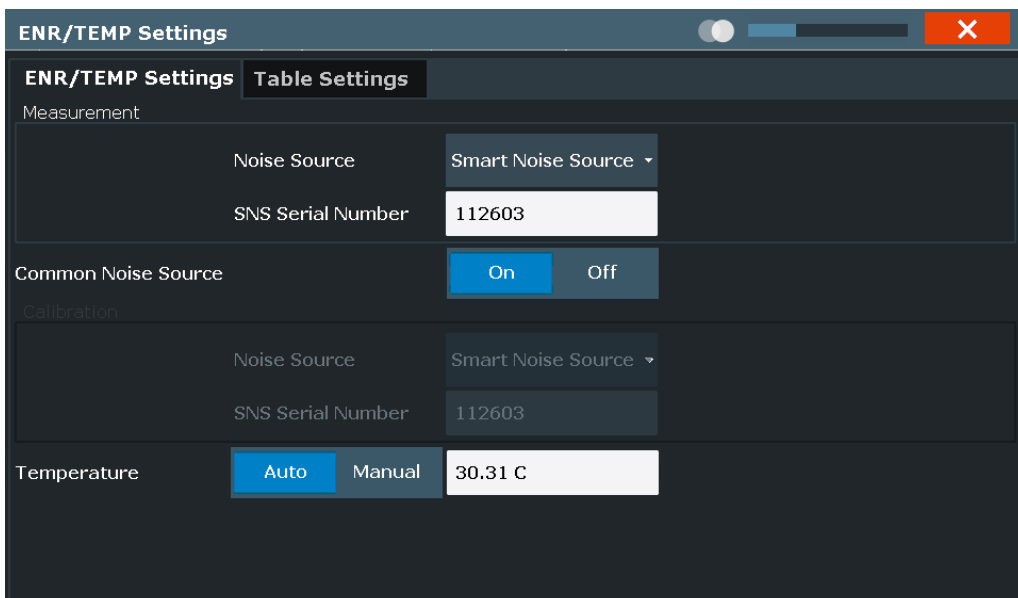


Fig. 2: When the R&S®FS-SNS smart noise source is connected, ENR, uncertainty and reflection coefficient tables are automatically loaded and the temperature is set.

SPECIFICATIONS IN BRIEF

Specifications in brief		
RF frequency range	R&S®FS-SNS18	10 MHz to 18 GHz
	R&S®FS-SNS26	10 MHz to 26.5 GHz
	R&S®FS-SNS40	100 MHz to 40 GHz
	R&S®FS-SNS55	100 MHz to 55 GHz
	R&S®FS-SNS67	100 MHz to 67 GHz
	R&S®FS-SNS90	60 GHz to 90 GHz
	R&S®FS-SNS110	75 GHz to 110 GHz
ENR	R&S®FS-SNS18	5 dB to 7 dB
	R&S®FS-SNS26	13 dB to 17 dB
	R&S®FS-SNS40	10 dB to 17 dB
	R&S®FS-SNS55	7 dB to 21 dB
	R&S®FS-SNS67	7 dB to 20 dB
	R&S®FS-SNS90	15 dB (typ.)
	R&S®FS-SNS110	13 dB (typ.)
Connector	R&S®FS-SNS18	SMA male
	R&S®FS-SNS26	APC 3.5 mm male (compatible with SMA)
	R&S®FS-SNS40	2.92 mm male (compatible with SMA)
	R&S®FS-SNS55	1.85 mm male (compatible with 2.4 mm)
	R&S®FS-SNS67	1.85 mm male (compatible with 2.4 mm)
Connector type	R&S®FS-SNS90	WR12
	R&S®FS-SNS110	WR10
VSWR	R&S®FS-SNS18	
	0.01 GHz ≤ f < 5 GHz	≤ 1.10:1
	5 GHz ≤ f < 15 GHz	≤ 1.15:1
	15 GHz ≤ f ≤ 18 GHz	≤ 1.25:1
	R&S®FS-SNS26	
	0.01 GHz ≤ f < 5 GHz	≤ 1.15:1
	5 GHz ≤ f < 18 GHz	≤ 1.25:1
	18 GHz ≤ f ≤ 26.5 GHz	≤ 1.35:1
	R&S®FS-SNS40	
	0.1 GHz ≤ f < 5 GHz	≤ 1.25:1
	5 GHz ≤ f < 18 GHz	≤ 1.30:1
	18 GHz ≤ f < 26.5 GHz	≤ 1.40:1
	26.5 GHz ≤ f ≤ 40 GHz	≤ 1.50:1
	R&S®FS-SNS55	
	0.1 GHz ≤ f < 18 GHz	≤ 1.50:1
	18 GHz ≤ f < 26.5 GHz	≤ 1.75:1
	26.5 GHz ≤ f < 40 GHz	≤ 2.00:1
	40 GHz ≤ f ≤ 55 GHz	≤ 2.50:1
	R&S®FS-SNS67	
	0.1 GHz ≤ f < 18 GHz	≤ 1.50:1
	18 GHz ≤ f < 26.5 GHz	≤ 1.75:1
	26.5 GHz ≤ f < 40 GHz	≤ 2.00:1
	40 GHz ≤ f ≤ 67 GHz	≤ 2.50:1
	R&S®FS-SNS90	
	60 GHz ≤ f ≤ 90 GHz	≤ 1.60:1
	R&S®FS-SNS110	
	75 GHz ≤ f ≤ 110 GHz	≤ 1.60:1



The R&S®FS-SNS is delivered in a wooden box.

ORDERING INFORMATION

Designation	Type	Order No.
Base units¹⁾		
Smart noise source, 10 MHz to 18 GHz	R&S®FS-SNS18	1338.8008.18
Smart noise source, 10 MHz to 26.5 GHz	R&S®FS-SNS26	1338.8008.26
Smart noise source, 100 MHz to 40 GHz	R&S®FS-SNS40	1338.8008.40
Smart noise source, 100 MHz to 55 GHz	R&S®FS-SNS55	1338.8008.55
Smart noise source, 100 MHz to 67 GHz	R&S®FS-SNS67	1338.8008.67
Smart noise source, 60 GHz to 90 GHz	R&S®FS-SNS90	1338.8008.90
Smart noise source, 75 GHz to 110 GHz	R&S®FS-SNS110	1338.8008.11
Options		
Noise figure measurements	R&S®FSW-K30	1313.1380.02
Noise figure measurements	R&S®FSWP-K30	1325.4244.02
Noise figure measurements	R&S®FSMR3-K30	1345.3637.02
Noise figure measurements	R&S®FSV3-K30	1330.5045.02
Noise figure measurements	R&S®FPL1-K30	1323.1760.02
Noise figure measurements	R&S®FPS-K30	1321.4104.02
Accessories supplied with each R&S®FS-SNS		
Interface cable, cable length: 1.8 m	R&S®SNSCABLE	1338.8020.00
Manual, carrying case		
Optional accessories		
Y adapter cable for legacy instruments	R&S®SNSCABLE-Y	1338.8066.00

¹⁾ R&S®FS-SNS smart noise sources are supported by the following devices: R&S®FSW, R&S®FSWP, R&S®FSMR3000, R&S®FSVA3000, R&S®FSV3000, R&S®FPL1000 and R&S®ZNL.

This product is manufactured for Rohde & Schwarz by NoiseCom, 25 Eastmans Road, Parsippany, NJ 07054, United States.

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 trail-blazers 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

Rohde & Schwarz training

www.training.rohde-schwarz.com

Rohde & Schwarz customer support

www.rohde-schwarz.com/support

