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

Product Brochure
Version 03.01

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 GHz, 26.5 GHz, 40 GHz, 55 GHz or 67 GHz
► Supported by the R&S®FSW, R&S®FSV3000, R&S®FSVA3000, R&S®FPL1000 signal and spectrum analyzers, the R&S®FSWP phase noise analyzer and VCO tester 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.

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).

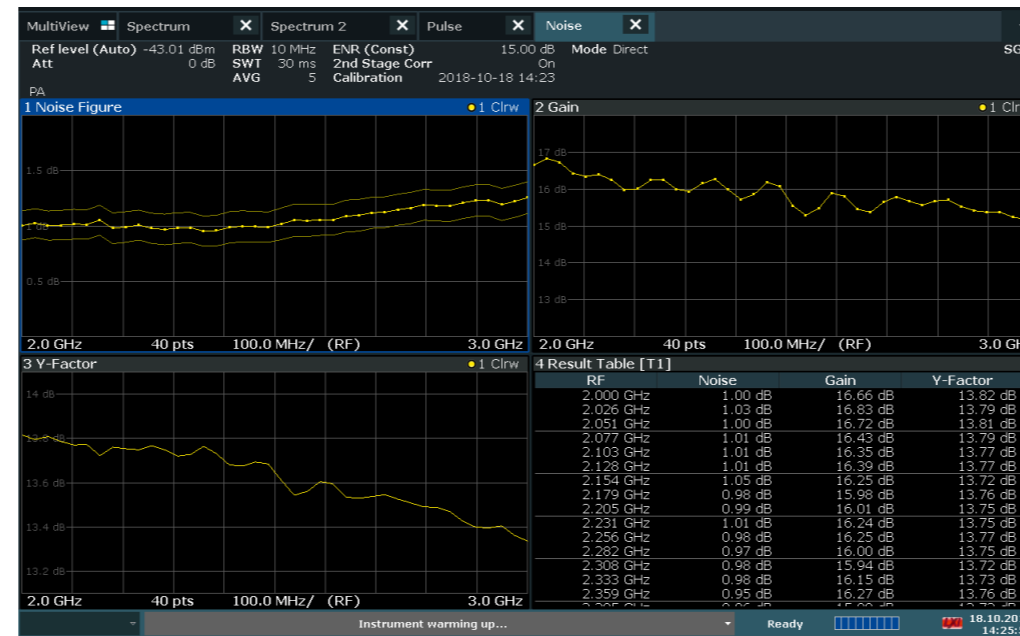R&S®FS-SNS for simple and accurate noise figure and gain measurements.

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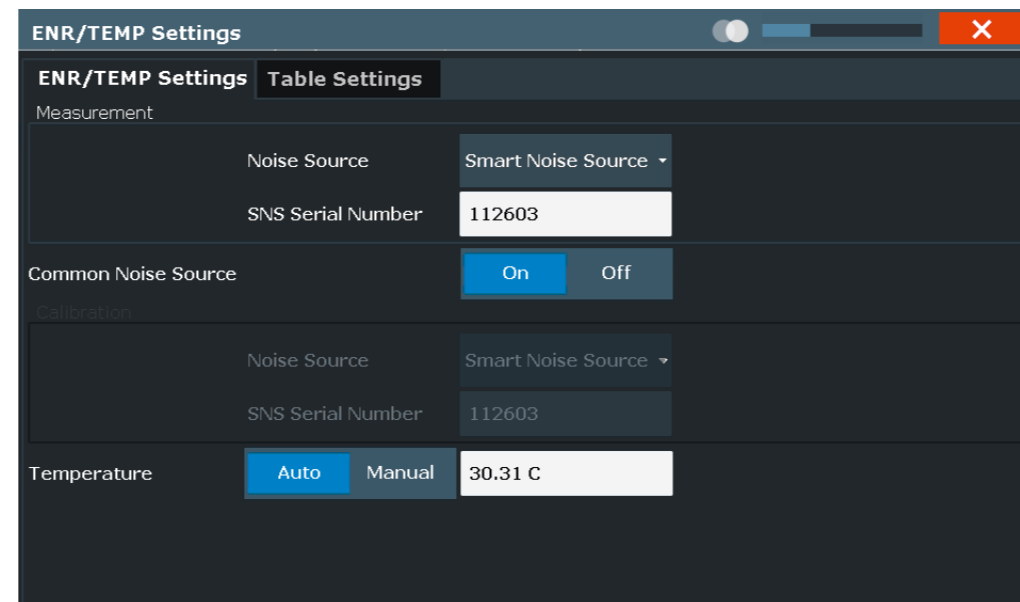

Fig. 2: When the R&S®FS-SNS smart noise source is connected, ENR, uncertainty and reflection coefficient tables are automatically loaded and the temperature is set.

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
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
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)
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

ООО «4ТЕСТ»
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The R&S®FS-SNS is delivered
in a wooden box.

ORDERING INFORMATION

Designation	Type	Order No.
Base units [1]		
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
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
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.