Millimeterwave Solid State Noise Sources

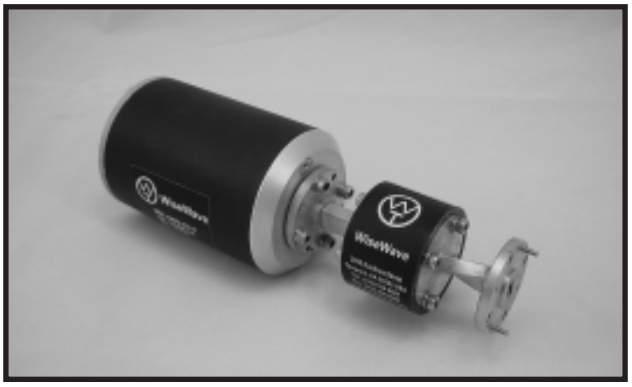
Bulletin No. ONS

FEATURES

- Solid state noise source
- Full waveguide band
- High ENR with good flatness
- High stability
- Compatible with Agilent noise test set
- Compact size

APPLICATIONS

- Calibration source
- Noise figure measurement
- Test instrument



ONS Series

DESCRIPTION

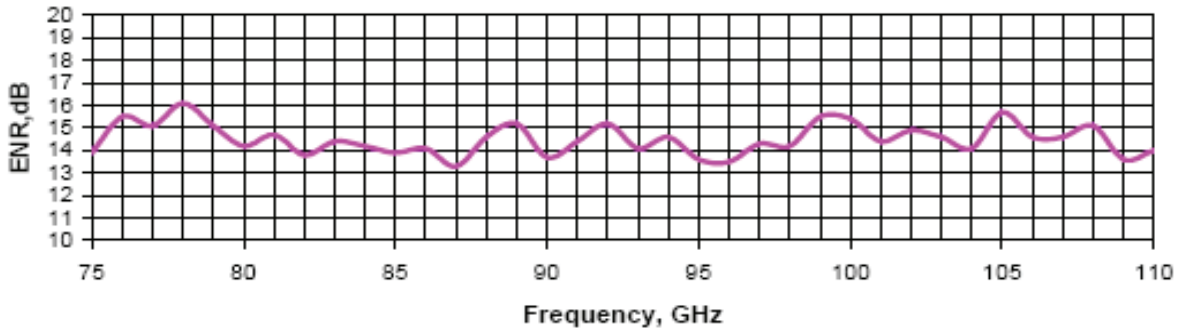
The **ONS** Series of solid state noise sources cover **full waveguide bands**. The noise sources offered cover the frequency range of 26.5 to 170 GHz in eight overlapping waveguide bands. The noise sources utilize a silicon IMPATT diode to provide a stable 15 dB typical ENR. The bias voltage and current for the noise source are +28 Vdc at 60 mA typical, which is compatible with the Agilent 8970A/B noise meters.

The standard noise sources are supplied with a full band Faraday isolator. While waveguide is the standard interface, the noise sources are also available with a coaxial interface by using the appropriate WiseWave PTC series waveguide to coax adapter up to 110 GHz.

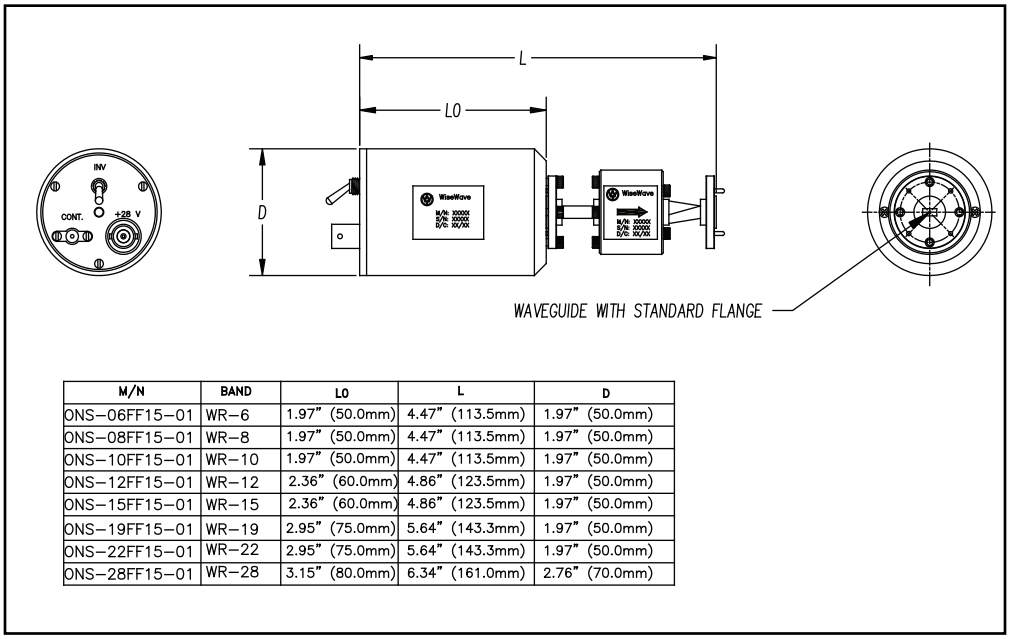
SPECIFICATIONS

Model Number	Frequency (GHz)	ENR (dB, Typ)	Flatness (dB, Typ)	Bias Voltage (volts, Typ)	Bias Current (mA, Typ)	Waveguide Flange
ONS-28FF15-I1	26.5-40	15	±1.0	+28	60	WR-28, UG599/U
ONS-22FF14-I1	33-50	14	±1.5	+28	60	WR-22, UG383/U
ONS-19FF13- I1	40-60	13	±1.5	+28	60	WR-19, UG383/U Mod
ONS-15FF13- I1	50-75	13	±1.5	+28	60	WR-15, UG385/U
ONS-12FF13- I1	60-90	13	±1.5	+28	60	WR-12, UG387/U
ONS-10FF12- I1	75-110	12	±1.5	+28	60	WR-10, UG387/U Mod
ONS-08FF12- I1	90 to 140	12	±1.5	+28	60	WR-08, UG387/U Mod
ONS-06FF12- I1	110- to 170	12	±2.0	+28	60	WR-06, UG387/U Mod

Representative ENR (The ENR shown is without FFF-10-01 isolator)



OUTLINE DRAWING



M/N	BAND	LO	L	D
ONS-06FF15-01	WR-6	1.97" (50.0mm)	4.47" (113.5mm)	1.97" (50.0mm)
ONS-08FF15-01	WR-8	1.97" (50.0mm)	4.47" (113.5mm)	1.97" (50.0mm)
ONS-10FF15-01	WR-10	1.97" (50.0mm)	4.47" (113.5mm)	1.97" (50.0mm)
ONS-12FF15-01	WR-12	2.36" (60.0mm)	4.86" (123.5mm)	1.97" (50.0mm)
ONS-15FF15-01	WR-15	2.36" (60.0mm)	4.86" (123.5mm)	1.97" (50.0mm)
ONS-19FF15-01	WR-19	2.95" (75.0mm)	5.64" (143.3mm)	1.97" (50.0mm)
ONS-22FF15-01	WR-22	2.95" (75.0mm)	5.64" (143.3mm)	1.97" (50.0mm)
ONS-28FF15-01	WR-28	3.15" (80.0mm)	6.34" (161.0mm)	2.76" (70.0mm)

Ducommun

www.ducommun.com

E-Band Noise Figure and Gain Test Set
Covering 60.0 - 90.0 GHz

Description

Ducommun's model SNG-12-01, is a full E-band noise figure and gain test set which includes a frequency down-converter (SCD-75301015-01) and a noise source (ONS-12-I1). Its primary function is to extend the testing capability of low cost, low frequency noise figure meters. It also allows noise figure testing of E-band devices without a noise figure meter by using the Y-factor method. The extender box is also versatile for use with various other applications as a block down-converter. With a low cost design, model SNG-12-01 is an affordable expansion to millimeter wave labs that do not have the budget for large scale equipment.

Features

- Full waveguide band capability
- Low spurious/harmonics
- Low LO frequency and power requirement
- Compact, lightweight

Specifications

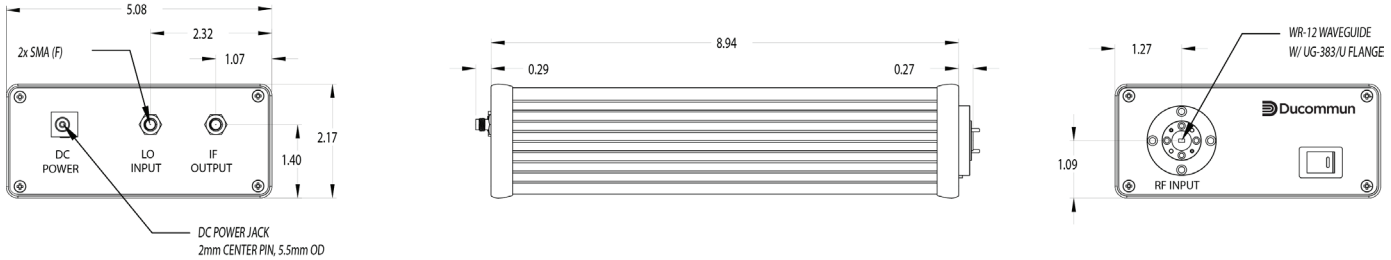
	MIN.	TYP.	MAX.
RF FREQUENCY INPUT	60.0 GHz		90.0 GHz
LO FREQUENCY INPUT	10.0 GHz		15.0 GHz
LO POWER INPUT	5.0 dBm	7.0 dBm	10.0 dBm
IF FREQUENCY OUTPUT	10.0 MHz		1.6 GHz
CONVERSION GAIN		17.0 dB	
HARMONICS/SPURIOUS	40.0 dBc		
RF INPUT RETURN LOSS	15.0 dB		
LO INPUT RETURN LOSS	10.0 dB		
IF OUTPUT RETURN LOSS	10.0 dB		
DC INPUT POWER		12.0 VDC	

Interfaces

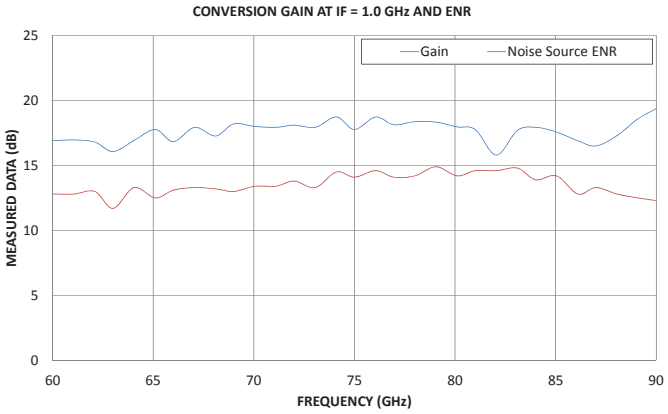
RF INPUT PORT
WR-12 WAVEGUIDE WITH UG-387/U FLANGE
LO INPUT PORT
SMA (FEMALE) CONNECTOR
IF OUTPUT PORT
SMA (FEMALE) CONNECTOR
DC POWER INPUT PORT
2.1mm ID, 5.5mm OD POWER JACK

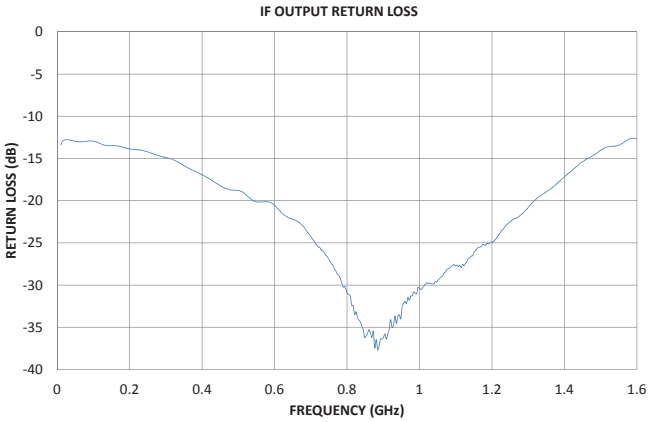
Mechanical Outline

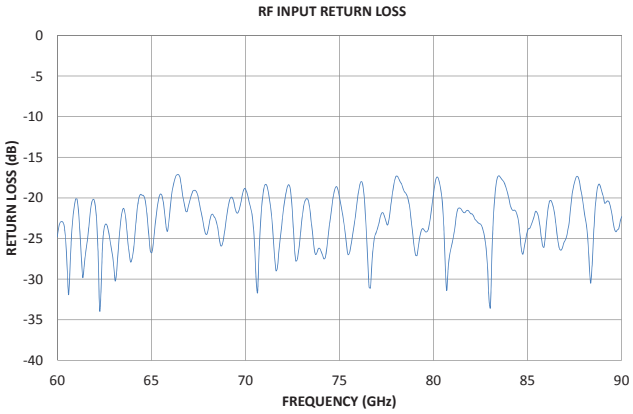
Unless other wise specified, all dimensions are in inches with ±0.01" tolerance

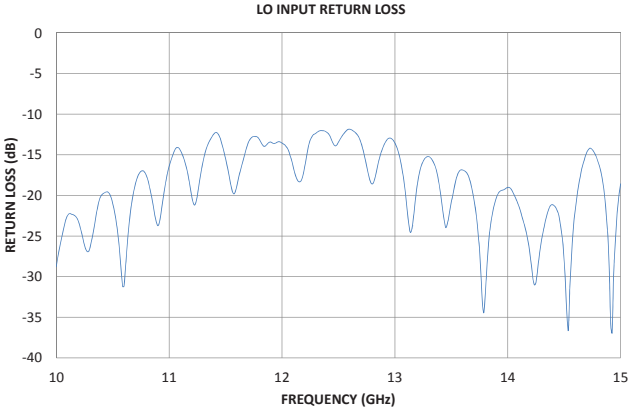


Measured Data at Room Temperature



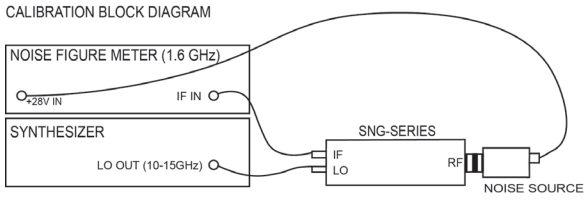


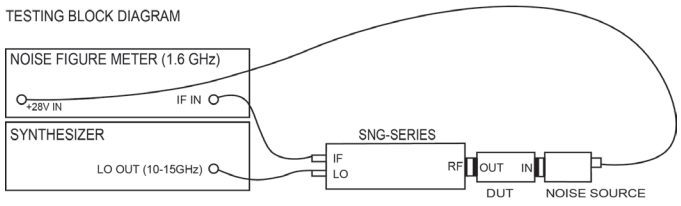




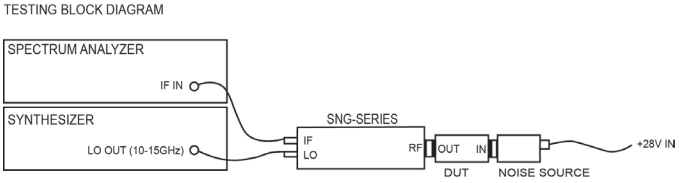
Applications

EXTENDING CAPABILITY OF NOISE FIGURE METER





TESTING NOISE FIGURE USING SPECTRUM ANALYZER USING Y-FACTOR METHOD



Y factor is the radio of output noise density when the noise source is on and off.

NF = ENR – 10log(Y-1)