

# SCD-12-01

## 60.0-90.0 GHz Block Down-Converter

### Description

Model SCD-12-01 is a full E-band block down-converter. 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, using the Y-factor method. The block down-converter is also versatile for use with various other applications.

With a low cost design, model SCD-12-01 is an affordable expansion to millimeter wave labs that do not have the budget for large scale equipment.

### Features

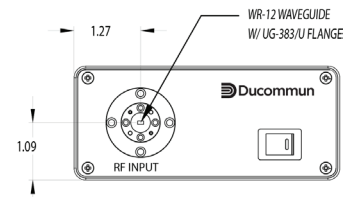
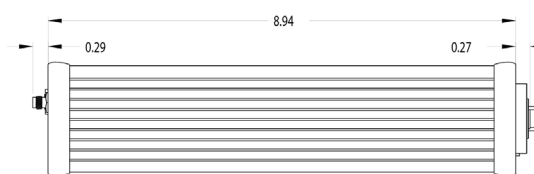
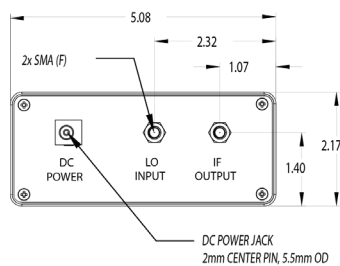
- Full waveguide band capability
- Low spurious/harmonics
- Low LO frequency and power requirement
- Compact, lightweight

### 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	

### Mechanical Outline

Unless other wise specified, all dimensions are in inches with  $\pm 0.01''$  tolerance



### Interfaces

#### RF INPUT PORT

WR-12 WAVEGUIDE  
WITH UG-387/U FLANGE

#### LO INPUT PORT

SMA (FEMALE) CONNECTOR

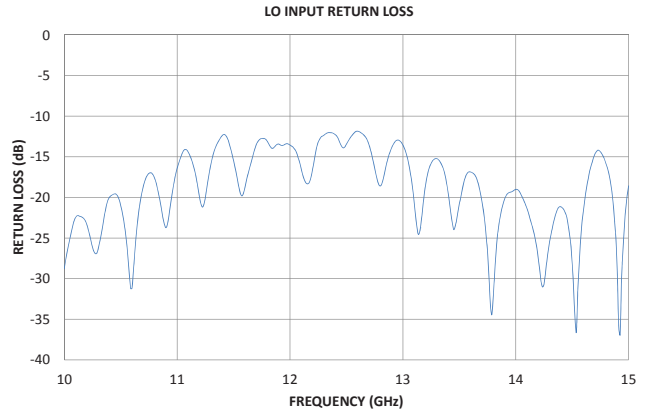
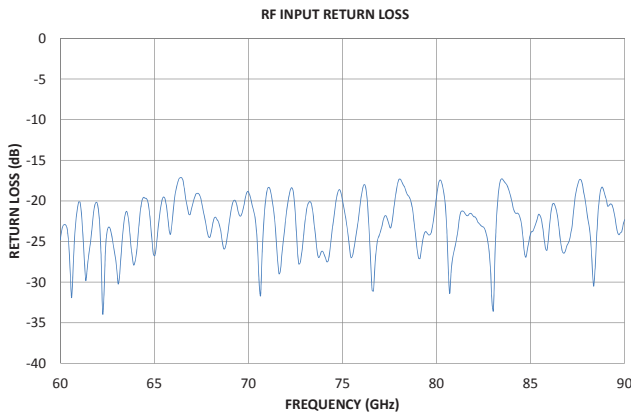
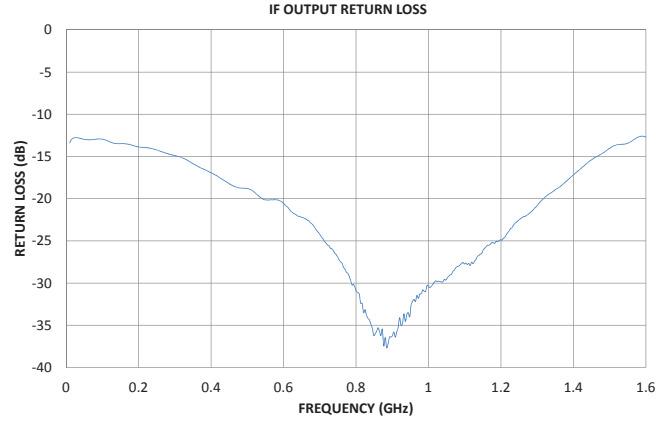
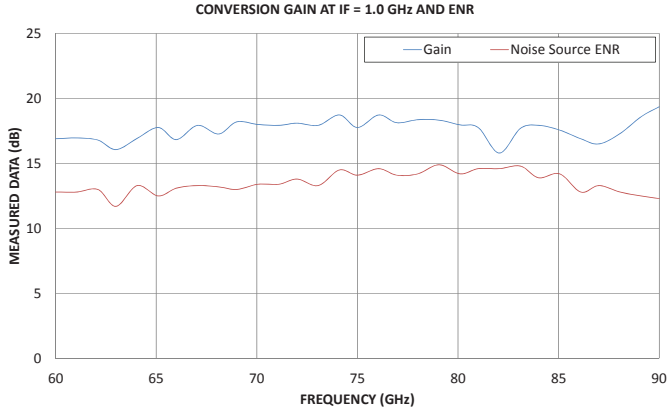
#### IF OUTPUT PORT

SMA (FEMALE) CONNECTOR

#### DC POWER INPUT PORT

2.1mm ID, 5.5mm OD POWER JACK

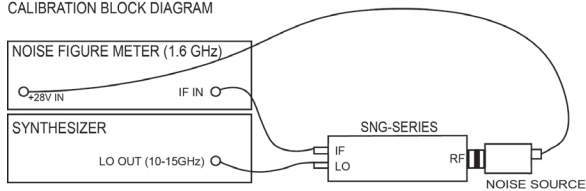
## Measured Data at Room Temperature



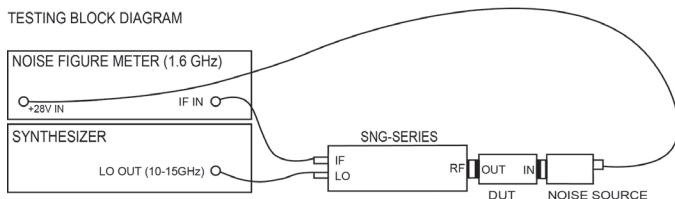
## Applications

### EXTENDING CAPABILITY OF NOISE FIGURE METER

CALIBRATION BLOCK DIAGRAM

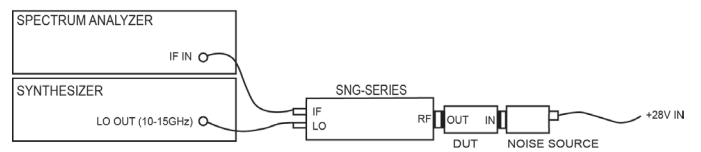


TESTING BLOCK DIAGRAM



### TESTING NOISE FIGURE USING SPECTRUM ANALYZER USING Y-FACTOR METHOD

TESTING BLOCK DIAGRAM



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

$$NF = ENR - 10\log(Y-1)$$