

Carrier-to-Noise Generator CNG-DX

Hollis Electronics CNG-DX is a digital technology, low-cost solution for Carrier-to-Noise Generation.

Key Features of the CNG-DX:

- 1 or 2 Independent Channels (more optional)
- Independent Digital Noise Generator
- Digital Power Meter
- Single Card, Single Supply Voltage design allows for portability into a customer's system
- Frequency Doppler and Offset (optional)

Using state-of-the-art digital signal processor (DSP) technology, the CNG-DX provides improved noise generation. With its dual internal digital power meters and built-in noise generators, this single instrument provides accurate and repetitive carrier-to-noise setting ability in one box. The CNG-DX is an ideal instrument for creating realistic scenarios for closed loop testing of satellites, ground equipment and mobile transceivers.

Center frequency	140 MHz
Operating bandwidth (1dB)	72 MHz <i>(wider available)</i>
Nominal input level	-20 dBm
Input dynamic range	12 Bits <i>(optional 14 bit)</i>
Nominal gain from input to output	0 dB, ± 1 dB
Return Loss	14dB Max, 19dB Typ
Characteristic impedance (input and output)	50 Ohms
Connector type	BNC (female)
Spurious	≤ -50 dBc
Signal-to-Noise ratio	≥ 30 dB
Insertion delay	≤ 5 us

Highlights:

- 1 or 2 independent channels (more optional)
- 2 AWGN noise generators in one instrument (more optional)
- Fully digital implementation using the latest DSP technology resulting in high accuracy and repeatability
- 0.01 dB resolution on Eb/No, C/N, C/No, No settings
- Frequency Doppler simulating Rx or Tx moving (optional)
- Controlled with a simple set of commands via Ethernet
- 1 IP Address per channel allows independent channel control

CNG-DX

Test Configurations:

1 or 2 Channel
Systems available in
standard model

Channels are totally
independent

More channels in one
enclosure optional

Applications:

Carrier-to-Noise
Generator (CNG)

Radio / Modem
Testing

0.01 dB Resolution
allows small change in
Eb/No Testing

System Integration

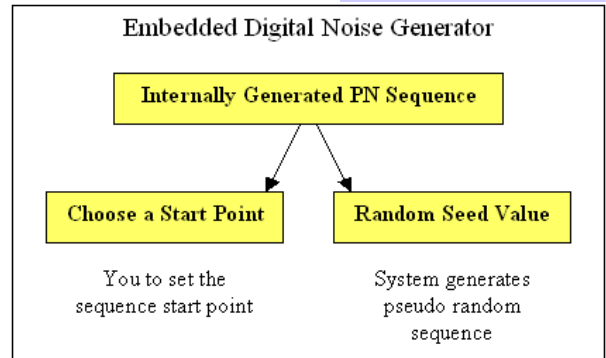
Mobile Transceiver
Testing

Built-in Digital Noise Generators

The dual Digital Noise Generators allow generation of various forms of noise impairments to test the robustness of system design.

The advantage of Digital Noise is that the accuracy of the signal to noise ratio is not affected by the analog discrepancies introduced by RF amplifiers and other components in the RF chain eliminating the need for periodic calibration. The noise and signal are combined digitally where the noise is perfectly flat and the signal power level is measured digitally. This means that any variations in the frequency response in the system after the noise is added to the signal, affects both the signal and the noise equally.

By using the digital output attenuator and the digital attenuator of the digital noise source the operator has complete flexibility over setting the Eb/No or SNR. The operator has a choice of setting an SNR or Eb/No. Since the noise is added digitally to the digitized signal, accuracy and repeatability are greatly improved.



Frequency Doppler Specifications (optional feature)

The minimum specifications of the CNG-DX are:

Doppler Range:	± 1 MHz (Higher ranges available)
Maximum Rate of Change:	± 10 kHz/sec
Maximum Acceleration:	± 10 kHz/Sec ²
Digital Step Size (nominal)	1 Hz
Profile Types:	Linear Limit, Linear Cyclical, Sinusoidal
Sweep:	Single or continuous

Specifications:

General

Input Frequency:	140 MHz
IF bandwidth (1dB):	72 MHz (wider available)
Number of channels:	1 or 2
Input level:	-20 dBm \pm 1dB
Output level :	-20 dBm \pm 1 dB
Gain:	0 dB typical
VSWR:	1.5 : 1 Max, 1.25 : 1 Typical
Temperature Range:	25° C nominal +/- 5° C
Signal-to-Noise Ratio:	\geq 30 dB
Spurious:	\leq -50 dBc in-band
Bypass mode delay:	\leq 5 μ s
Connector type:	Type BNC

Digital Noise Generator (AWGN)

PN sequence	Random (60 hr. repeat intervals)
Distribution density	Gaussian
Crest factor	16.7 dB
C/N	
Max Noise Power Level	-113 dBm/Hz (IF, assuming unity gain)
Resolution:	0.01 dB
Accuracy:	\pm 0.1 dB at IF
Noise Bandwidth:	Greater than 80MHz (much wider available)

Frequency Doppler (optional)

Doppler range:	\pm 1 MHz (Higher ranges available)
Maximum rate of change:	\pm 10 kHz/sec
Maximum acceleration:	\pm 10 kHz/Sec ²
Digital step size:	1 Hz
Profile types:	Linear limit, linear cyclical, sinusoidal
Sweep:	Single or continuous

System Specifications

Power Requirements	
Voltage	100-120 VAC 220-250 VAC, auto sensing 47-60 Hz
Frequency	
Operating environment	
Temperature	5° to 40° C
Humidity range	20 to 80% RH
Dimensions	21" D x 19" W x 7.0" H (534mm D x 483 mm W x 178 mm H)
19 inch 4U chassis	
Weight	30 lbs. (13.6 kg)
Control interfaces	Ethernet

Special Features

The CNG-DX is a single card, single supply voltage design which can be integrated directly into a customers system.

Contact HEC for more information.

Ordering Information

CNG-DX

All Units include

Digital Noise Generator(s)
Ethernet Control

Options:

- 1 Front Panel Control
- 2 Frequency Doppler and Offset
- 3 14 bit Input Dynamic Range
- 4 Wider IF Bandwidth
- 5 Wider Noise Bandwidth
- 6 Additional Independent Channels

Information contained within this document is subject to change based on technological advances.
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