



Data Sheet

J7000B
Jitter Noise
Generators



J7000B Jitter Noise Generators

The J7000B jitter noise generator generates additive white Gaussian noise (AWGN) with a large crest factor to model “real world” random jitter. This random jitter is commonly referred to as Rj in the industry accepted jitter hierarchy model and managing Rj is critical to the performance and capability of high-speed communication busses and devices. Today’s high-speed digital circuit designers are challenged with narrow jitter tolerances to deliver high data rates with low bit error rate (BER). Designing a system that is not only compliant to industry specifications but also robust enough to handle jitter and maintain an acceptable bit error rate is a never ending challenge and only gets harder as frequency and data rate increase. The J7000B allows designers to add Rj directly to a data stream to evaluate performance of their device and measure the results with the same tools they typically use such as an oscilloscope or bit error rate tester (BERT). By adding precise amounts of white noise, the reduction in Signal to Noise Ratio (SNR) can be measured to evaluate the receiver’s performance. This allows the total timing budget, including margins, to be minimized for maximum data rates. The J7000B noise generator is capable of outputting this random noise (Rj).

The Noisecom J7000B is ideal for qualifying and quantifying single-ended or differential serial devices. For devices with multiple signal paths as with PAM-4, the J7000B can be configured to handle multiple differential signal inputs and outputs with individual control of each pair of signals. The J7000B can be used in receiver sensitivity tests and for injecting noise onto a PC test board to characterize how the device under test can handle cross talk that can be radiated on PC board runs.

The J7000B is available in several standard frequency ranges, but custom frequencies, power, and flatness specifications can be provided. The Noisecom engineering team is able to customize and tune the J7000B to the specific needs of any new design, industry standard or jitter tolerance test requirements. The instrument has up to five optional bandlimiting filters that can be added for specific serial data testing requirements or methodologies.

This instrument features a large 7-inch touch-screen display for easy setup and operation. The noise level, noise on/off switching, signal on/off switching, and noise source selection can be controlled quickly with the touch screen, or remotely via Ethernet, as well as through the optional GPIB. The J7000B can be easily integrated into an automated test station under software control to reduce production test time.



General Specifications

- Output White Gaussian noise
- Minimum 18 dB Crest factor
- Output noise power -3 dBm (+/- 0.5 dBm)
- Noise attenuation 0 to 63 dB in 0.1 dB steps up to 2 GHz
- Noise attenuator ± 0.2 dB or 0.5%
- Signal path gain 0 ± 1 dB
- Ultra-low distortion signal path
- Standard connectors SMA female
- 7" touch screen display
- Dimensions: 17.22 in. wide x 6.30 in. including feet, high x 19.5 in. deep
- Fold-down feet for bench top use
- Power 115 VAC, 60 Hz
- Operating Temperature: -10° to +65°C
- Differential inputs and outputs
- Multiple differential inputs and outputs



Specifications

J7000B Series

Output Characteristics

Model	Frequency Band	Power (dBm)	dBm/Hz	Flatness (dB)
J7109B	10 MHz - 1 GHz	-3	-93	±0.25 / 40 MHz
J7115B	10MHz - 5 GHz	-3	-100	±2.5 dB
J7113B	1 GHz - 13 GHz	-3	-107	±3 dB
J7130B	1 GHz - 30 GHz	-3	-100	±4 dB
J7160B	1 GHz - 60 GHz	-8	-110	±5 dB

Applications

- Rj Random Jitter Source
- Serial Data Testing
- BER, Jitter Testing
- PCI Express, 100 Gig E, SATA
- PAM-4
- PC board cross talk

Option Number

Description

Jopt03	230 VAC, 50 Hz
Jopt04	Switch up to 5 filter inputs
Jopt05	127 dB signal attenuator in 1 dB steps
Jopt06	DC coupled signal path (6 dB RF Loss)
Jopt07	IEEE-488 interface remote control
Jopt08	Optional 19" rack mount brackets
Jopt09	Custom frequency, power or flatness requirement
Jopt10	Differential Outputs