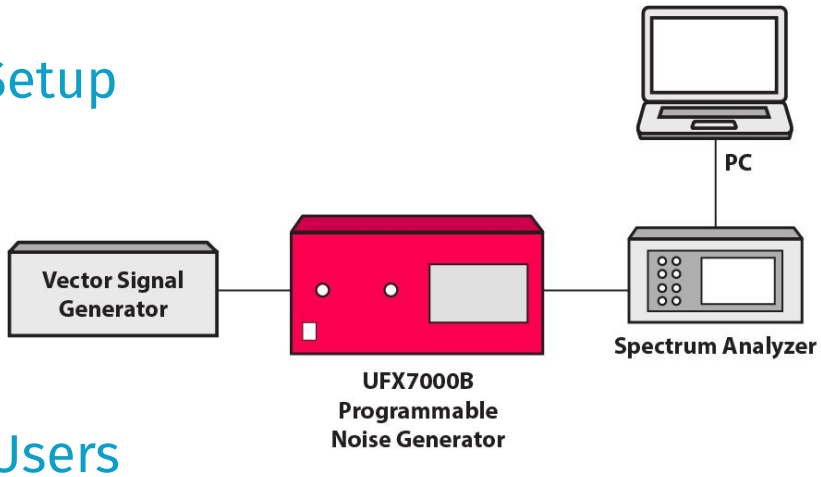
Performance & Robustness Testing: Configurable Noise Generation Platform

SATCOM, MILCOM, and advanced wireless networks must operate reliably in environments with rising noise floors and increasing interference from surrounding sources. For example, SATCOM links must contend with interference from nearby ground stations, satellites, and atmospheric effects. Similarly, MILCOM systems operate in congested RF environments where intentional or unintentional jamming can disrupt the transfer of critical data. Introducing controlled white, pink, or custom-shaped noise signals during testing provides a flexible and repeatable method to quantify a system's tolerance to interference under realistic operating conditions, offering valuable insight into key design optimizations.

The demonstration highlights the capabilities of the Maury Microwave UFX7000B programmable noise generator as it adds precise, configurable noise profiles onto a signal to evaluate performance, robustness, and interference resilience. The versatile architecture of the UFX7000B allows control of multiple attenuators, switches, and filter banks, enabling engineers to shape the exact noise profile they need with exceptional control. With the UFX7000B output fed into a spectrum analyzer and displayed on a PC, users can see how customizable noise generation supports faster validation, confident design decisions, and reliable operation in dense wireless environments.

Demo Setup



Target Users

Target users include design and test engineers working with wireless communications systems, satellite networks, and mission-critical systems that need to know how broadband noise impacts their receiver. For rackmount systems with limited space, the Maury RFX7000B noise generator offers a compact form factor solution.

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Product Overview

UFX7000B Programmable Noise Generator

The UFX7000B broadband AWGN generator has a powerful single board computer with a flexible architecture used to create complex custom noise signals for advanced test systems. This versatile platform allows the user to meet their most challenging design requirements. Precision components provide high output power with superior flatness, and the flexible computer architecture allows control of multiple attenuators, switches, and filter banks.

The standard RF configuration includes a broadband noise source and noise path attenuator with a maximum attenuation range of 127 dB in 0.1 dB steps. Additional attenuation ranges and step sizes are available. Optional filters can be specified in any combination of low pass, high pass, band pass, or band reject. Combined with advanced switching circuitry, the designer can create many different path combinations. The signal output connectors can be located on the front or rear panel to provide convenient customer access on the bench or in a rack system. An optional signal combiner and signal attenuator allow independent control of the noise and signal paths to vary SNR while BER testing.

The unit has a 7-inch touch-screen display, mouse, and keyboard for manual control, or standard Ethernet for ATE remote control. Optional IEEE 488.2 GPIB and RS232 remote interfaces are also available. Customization options can meet additional requirements for your specific noise application.

KEY SPECIFICATIONS AND FEATURES:

- Output white Gaussian noise
- Output power up to +30 dBm
- 127 dB of attenuation; 0.1 dB step size
- Units > 2 GHz have total attenuation of 79.9 dB
- Low distortion signal path
- Power 115 VAC, 60 Hz
- Standard connectors SMA female

More Resources

Visit maurymw.com/info/mapcon-2025 to learn more about Maury solutions.

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