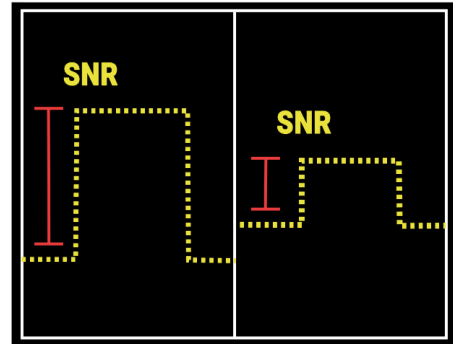


Noise Tolerance & Jitter Measurements for Satellite Networks

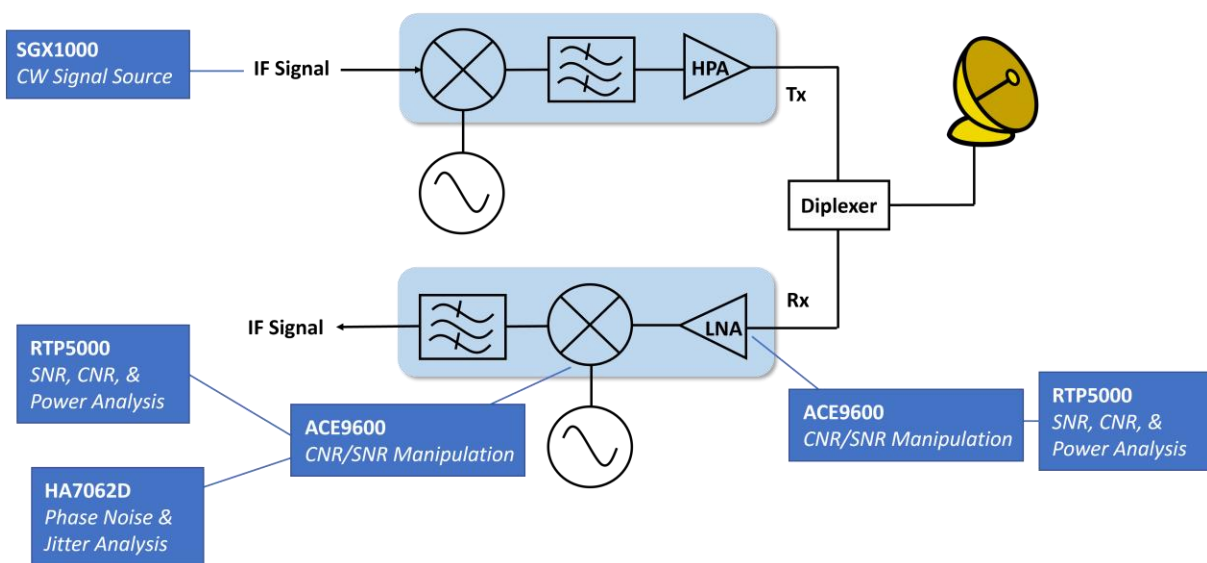
As more and more satellites are launched into low Earth orbit (LEO), satellite networks must contend with various communications from relay satellites and uplink/downlink stations. To ensure performance observed in the lab is replicated after deployment, satellite communications networks must be designed to operate in real-world RF interference conditions.

The dBm ACE9600 Advanced Channel Emulator can fully emulate RF link impairments in the uplink/downlink paths of satellite networks. In addition to full RF channel emulation, the Noisecom UFX7000B Programmable Noise Generator uses its flexible architecture to produce complex, controllable, and customizable additive white Gaussian noise (AWGN) signals that satellite network designers can inject into their unique RF uplink/downlink paths. The superior performance of Boonton RTP5000 Series Real-Time USB Peak Power Sensors (100,000 measurements per second, real-time processing, 3 nanosecond rise times, etc.) can be used to measure and display SNR, CNR, and power level measurements.



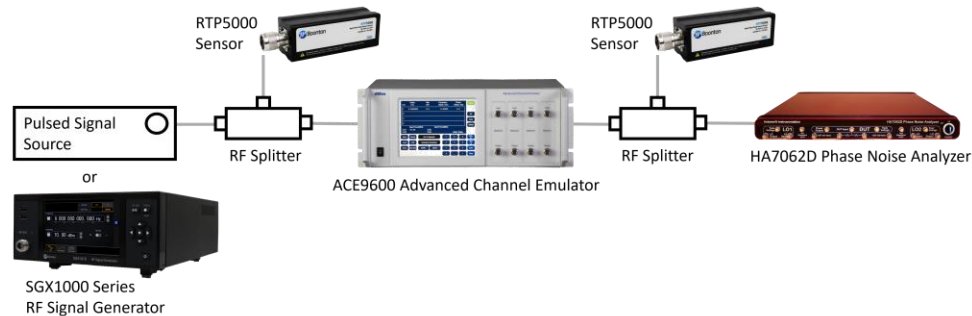
Precision Carrier and Noise Manipulation

Increasing AWGN on a signal can also affect phase noise and jitter, both of which are used to denote signal stability. Jitter manifests as time-domain variations of the waveform, while phase noise measures frequency instabilities. Satellite network developers can utilize the Holzworth HA7062D Real-Time Phase Noise Analyzer to test the jitter and phase noise of their satellite network.



SATELLITE 2024 Test Setup:

The ACE9600 can fully emulate satellite RF link impairments. Depending on customer needs, the UFX7000B can simplify CNR measurements. RTP5000 Series sensors monitor the input and output signals for SNR, CNR, and power level analysis. After passing through the ACE9600, the HA7062D is used to analyze the effects of jitter on the signal.



Product Overviews:

Boonton RTP5000 Series Real-Time USB Peak Power Sensors:

Boonton RTP5000 Series sensors deliver the fastest measurement rate of 100,000 measurements per second with zero latency or gaps in acquisition. Its superior performance also includes 3 ns rise times, 195 MHz of video bandwidth, and 100 ps time resolution.

dBm ACE9600 Advanced Channel Emulator:

The dBm ACE9600 Advanced Channel Emulator can add RF link impairments (delay, Doppler, path loss, AWGN, multipath fading) and hardware-in-the-loop impairments (amplifier compression/distortion, phase noise, IMUX/OMUX filter shaping) to fully emulate satellite uplinks/downlinks.

Holzworth HA7062D Real-Time Phase Noise Analyzer:

Holzworth Phase Noise Analyzers utilize real-time, dual core engines for cross correlation speed, which are coupled with a pair of high performance internal LOs from Holzworth HSX Series RF Synthesizers. The reconfigurable front panel enables additional feature sets and customized measurement setups, including noise floor measurement capability of the analyzer.

Noisecom UFX7000B Programmable Noise Generator:

The Noisecom UFX7000B Programmable Noise Generator has a powerful single board computer with a flexible architecture used to create complex custom noise signals for advanced test systems. Precision components provide high output power with superior flatness, and the flexible architecture allows control of multiple attenuators, switches, and filter banks.

More Resources:

Visit info.wtcom.com/satellite-2024 to learn more about T&M solutions for satellite communications systems.

