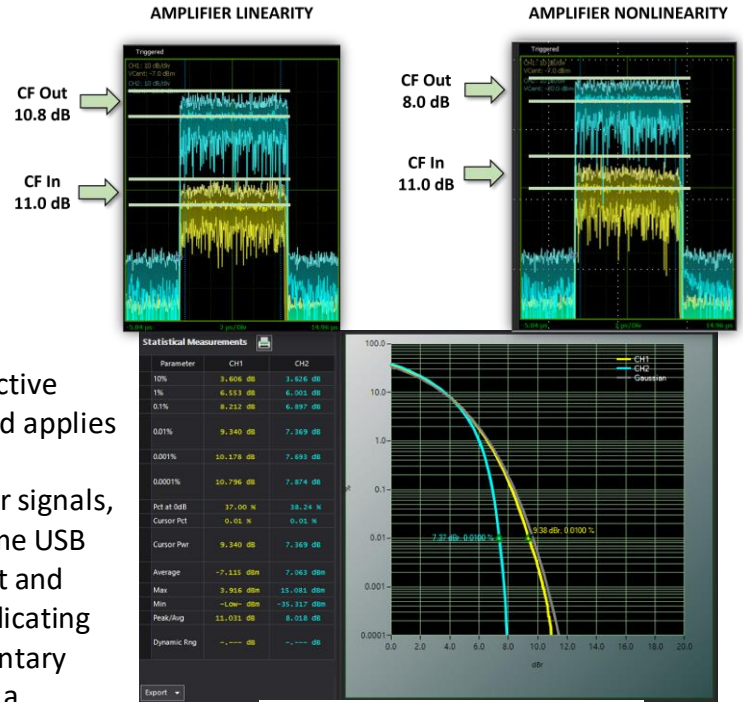


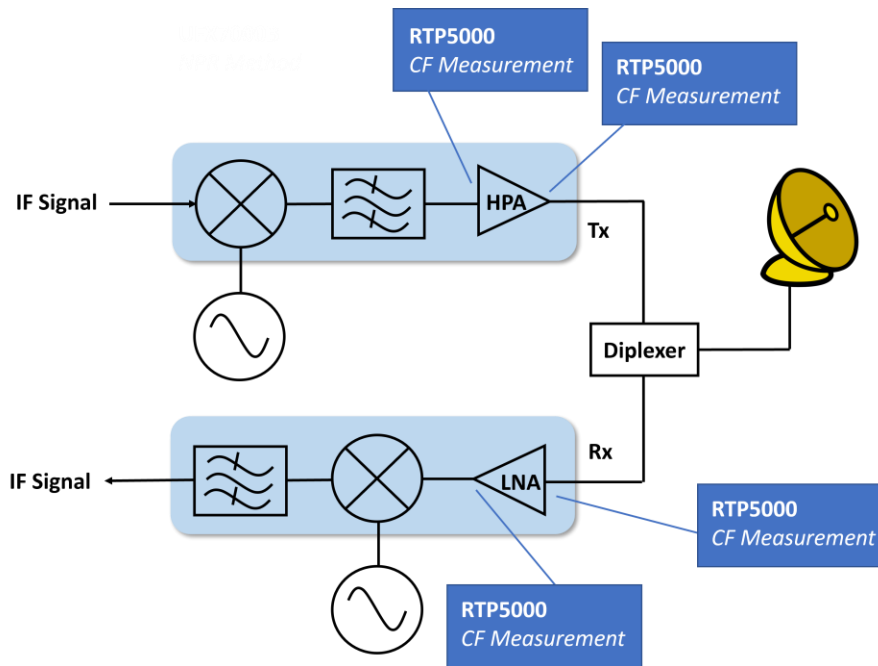
Amplifier Linearity Testing for Satellite Networks

Linearity is a characteristic used to determine the behavior and performance of amplifiers, which are critical components for high-fidelity satellite communications. Linear amplifiers reproduce signal transmissions faithfully, while nonlinear amplifiers can introduce waveform distortions and reduce the satellite system's dynamic range.

Crest factor (CF) offers an accurate and cost-effective approach for linearity assessment. The CF method applies a band-limited additive white Gaussian noise (AWGN) waveform, which mimics multiple carrier signals, to an amplifier. Boonton RTP5000 Series Real-Time USB Peak Power Sensors observe the amplifier's input and output, with a large discrepancy between CFs indicating nonlinearities. For further insight, the complementary cumulative distribution function (CCDF) provides a statistical analysis of CF values.

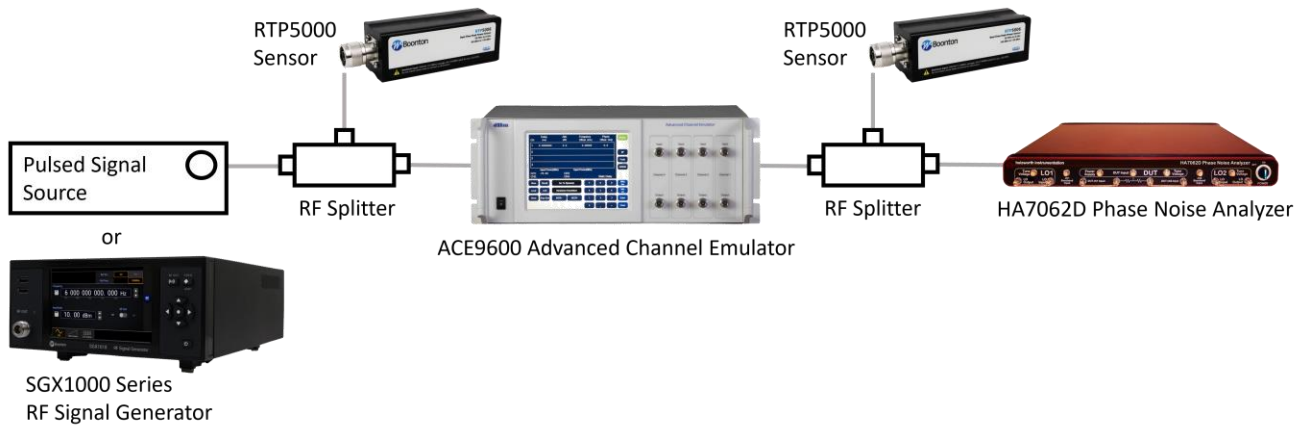


CF Measurements and CCDF



SATELLITE 2024 Test Setup:

An RTP5000 Series sensor monitors the CF from the output of the signal source. The ACE9600 contains the amplifier under test for this measurement setup, which can be distorted to show examples of nonlinear performance. Another RTP5000 Series sensor measures the CF of the signal that has passed through the amplifier for linearity analysis.



Product Overview:

Boonton RTP5000 Series Real-Time USB Peak Power Sensors:

Boonton RTP5000 Series sensors utilize Real-Time Power Processing™ technology to deliver the fastest measurement rate of 100,000 measurements per second with zero latency or gaps in acquisition. CF measurement capability can quickly establish if amplifiers are being driven into compression.

- Industry widest video bandwidth of 195 MHz
- Fastest rise time of 3 ns
- Finest resolution of 100 ps
- Crest factor, CCDF, and statistical measurements
- Fast 100,000 measurements per second

More Resources:

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

