Wireless Telecom Group

25 Eastmans Road
Parsippany, NJ 07054 USA

Satellite Network Emulation for 4G/5G Communications
Part 1: Signal Generation with Boonton, CommAgility, and Holzworth

Product Demo:

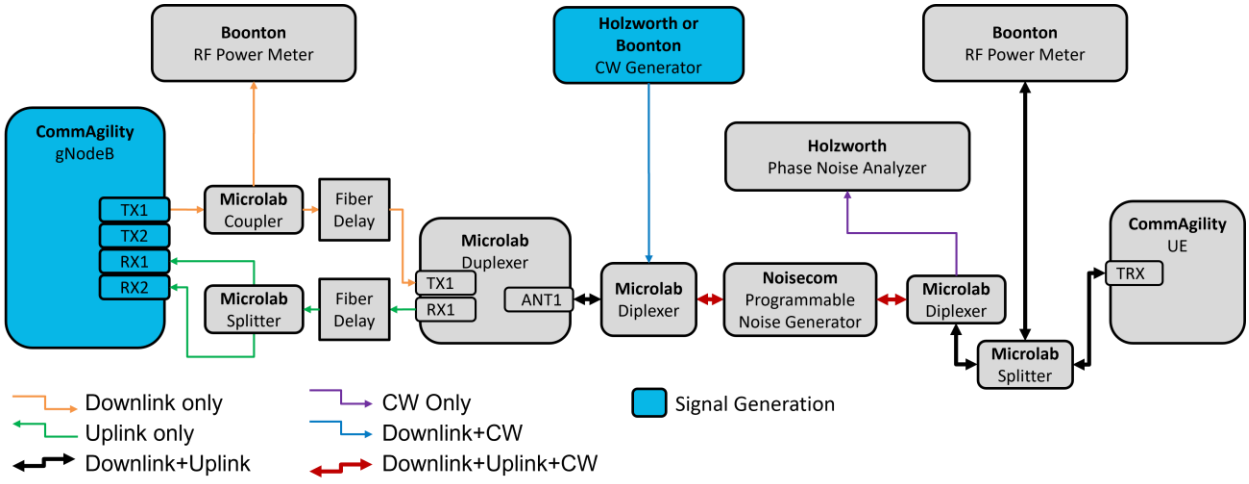
Part 1 of the test set-up begins with the user equipment (UE) connecting to the CommAgility 5G gNodeB to transmit data over a simulated satellite network. CommAgility allows for PHY source code manipulation and access to upper protocol layers to address latency and Doppler Shifts that GEO, MEO, and LEO systems must overcome. Using CommAgility products allows for fast development and deployment of private and secure networks to serve underutilized areas or provide secure communications.

In addition, either the Holzworth HSM Series RF Synthesizer Module or the Boonton SGX1000 Series RF Signal Generator can be used to generate a clean, low phase noise signal, which will be sent through the simulated satellite network as a test value for system analysis. Satellite RF signal integrity is threatened by interference from an increasing number of satellite uplink and downlink stations, as well as constellation communications between satellites as part of the relay network. A low phase noise reference value is vital in measuring the effect of real-world RF interference on satellite communications systems.

Target Users:

Target users include satellite network operators for private networks and defense, LEO network developers and providers, and broadband communications to underserved markets.

Test Set-Up:



25 Eastmans Road
Parsippany, NJ 07054 USA

About the CommAgility 5G gNodeB:

The CommAgility 5G Reference gNodeB is a pre-integrated system, including both hardware and software, and is based on the NXP Layerscape® Access® 5G integrated SoC chipset. Useful to UE/gNodeB product developers, 5G researchers, and 5G network engineers, the software and hardware are fully integrated and tested, which saves time and reduces risk.

Significant Features:

- Based on NXP LA1224-RDB evaluation platform
- Includes CommAgility CA-RF2-5Gn78 RF front end module
- Supplied with CommAgility's SmallCellPHY-5G software

About the Holzworth HSM Series:

The Holzworth HSM Series RF Synthesizer Modules are sources that are architected on a non-PLL based platform. The digital-analog hybrid design provides excellent phase noise performance and spurious response, which complements the phase coherent nature of these digital-analog hybrid signal sources.

Significant Features:

- Amplitude accuracy ±0.25 dB to as low as -70 dBm
- Frequency switching speed: 6 µs, 100% settled
- Onboard precision 100 MHz OCXO

About the Boonton SGX1000 Series:

The Boonton SGX1000 Series RF Signal Generator offers high-performance signal generation with an easy-to-use interface in a compact form factor. The SGX1000 utilizes a proprietary blend of direct digital and direct analog synthesis to provide ultra-fine frequency resolution, lightning-fast frequency switching, ultra-low phase noise and jitter, and superior reliability.

Significant Features:

- Frequency range: 10 MHz to 18 GHz
- Switching speed of 200 µs
- Ultra-low phase noise (3 GHz, 10 kHz offset) -122 dBc/Hz

More Resources:

Visit info.wtcom.com/satellite-2022 to learn more about satellite communications solutions from Boonton, CommAgility, and Holzworth.