

## Satellite Network Emulation for 4G/5G Communications Part 2: Signal Transport and Impairment with Microlab and Noisecom

### Product Demo:

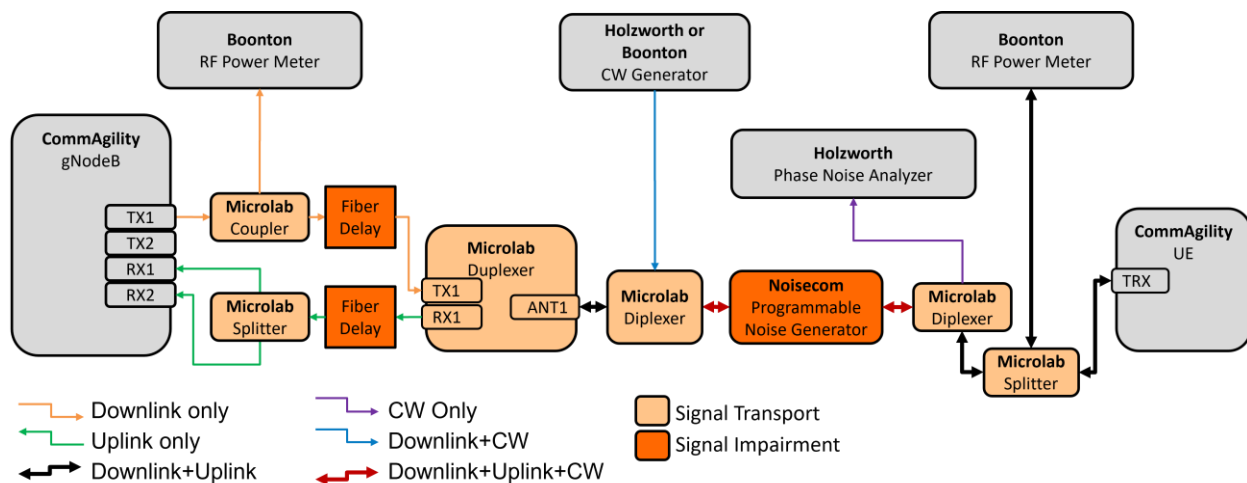
Part 2 of the test set-up utilizes a variety of Microlab products to combine, condition, and distribute the two signal paths generated in Part 1. Microlab provides a wide range of RF passive components that enable signal combining, signal conditioning, and signal distribution for satellite systems.

Before the signals are separated and routed to their appropriate location for testing, the combined signal is fed through the Noisecom UFX7000B Programmable Noise Generator, which stresses the RF signal integrity of the communications links in the presence of noise. By testing the robustness of the signal through controlled interference, designers can understand how the satellite network will perform in the presence of real-world interference challenges, such as signal jamming, carrier-to-noise impairments, and Eb/No. In addition, fiber optic delay lines are used to simulate and test the 4G/5G communication standards by stressing the timing of the signal.

### Target Users:

Target users include communications engineers that design, implement, and test the deployment of hybrid networks; satellite network operators for private networks and defense; LEO developers and providers; and broadband communications to underserved markets.

### Test Set-Up:



**About the Noisecom UFX7000B:**

The Noisecom UFX7000B programmable, broadband, additive white Gaussian noise (AWGN) generator has a powerful single board computer with 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.

**Significant Features:**

- Precision carrier-to-noise insertion
- Optional frequency filters and signal path attenuators
- 127 dB attenuation in 1 dB, or optional 0.1 dB steps

**About Microlab Passive Components:**

The Microlab CK-751N is a 6-dB coupler that provides a tap point where the downlink signal from the gNodeB can be measured. Efficiently combining low- and high-band signals, the Microlab BK-26N Diplexer combines the CW signal and the LTE downlink signal on the same transmission line. After the combined signal travels through the simulated satellite network, the BK-26N splits the signals into their respective frequency bands for monitoring and analysis. The Microlab D2-69FF is a two-way Wilkinson used to split the uplink signal to the two receiver inputs of the gNodeB. All the passive RF components are contained with a custom integrated assembly, which Microlab can provide to meet unique customer specifications.

**Significant Features:**

- Guaranteed specifications
- Low passive intermodulation (PIM)
- Wide variety of products
- Product availability (many products available in 3-5 days, direct or through distribution)
- System integration based on customer needs

**More Resources:**

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