Wireless Telecom Group

25 Eastmans Road
Parsippany, NJ 07054 USA

T&M Satellite Solutions
Demo 2: 5G TDD Network Timing

Product Demo:

The demonstration begins with the emulation of a 5G time division duplex (TDD) pulsed signal generated from either the CommAgility 5G gNodeB or Holzworth HSM6001B RF Synthesizer Module. This signal will be used as a benchmark for subsequent testing, representing uplink/downlink communications in a 5G TDD satellite network.

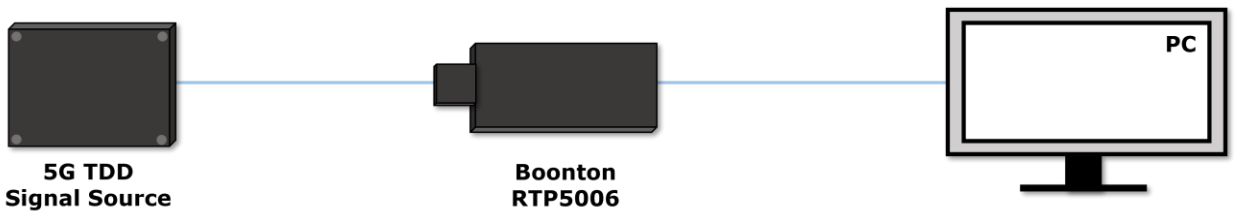
The output is fed into the Boonton RTP5000 Series Real-Time USB RF Peak Power Sensor, which showcases its leading performance and capabilities by analyzing the emulated 5G TDD pulse. Boonton RF power sensors, which utilize Boonton Real-Time Power Processing (RTPP) technology, offer superior capabilities in rise time, measurement speed, video bandwidth, and time resolution to capture waveform anomalies as well as measure critical parameters, such as rise time, fall time, and settling time for 5G TDD communications.

Successful implementation of 5G TDD satellite networks relies on advanced test instrumentation with the capabilities highlighted in this demonstration, since high-speed uplink/downlink switching must occur with the utmost precision and reliability, a challenge that intensifies in high frequency mmWave applications. Results from the demonstration are displayed on a PC.

Target Users:

Target users include design engineers, network developers, satellite communications providers, and government entities.

Test Setup:



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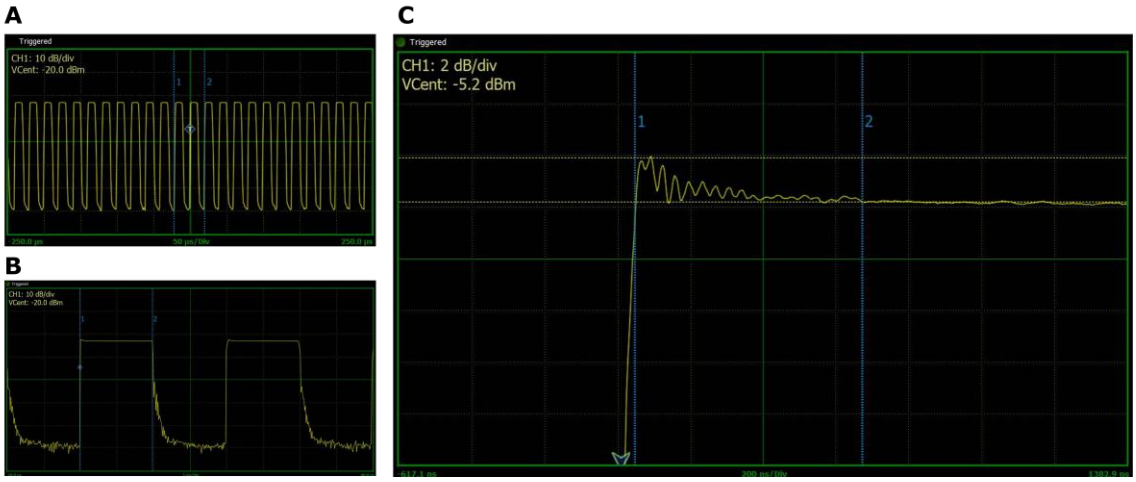
Results:



(A) The emulated 5G TDD pulse (repetition rate: 20 µs, pulse width: 10 µs, 50 µs/division); (B) Zooming into the frame (5 µs/division); (C) Overshoot captured (2 ns/division) with the RTP5000 Series, showing a 2 dBm spike and 625 ns recovery window of unusable data.

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.

About the Holzworth HSM6001B:

Holzworth HSM Series RF Synthesizer Modules are microwave sources that offer CW, AM, FM, phase, and pulsed signal generation. 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.

About the Boonton RTP5006:

Backed by RTPP technology, Boonton RTP5000 Series sensors are ideal instruments for RF power measurements that provide 100,000 measurements per second, 3 nanosecond rise times, 195 MHz of video bandwidth, and 100 picosecond time resolution to ensure gap-free signal acquisition and zero measurement latency.

More Resources:

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