



Satellite Communications

Up in the sky! It's a bird. It's a plane. IT'S YOUR DATA!

High bandwidth satellite networks offer many possibilities and opportunities. Interconnected and integrated with terrestrial networks, satellite links can provide a wide variety of network services globally and economically, making the concept of “anytime, anywhere networking” a reality.

However, there are several critical issues related to making network communications successful in a satellite environment. Among these issues are delay, clock jitter and bandwidth. Using higher frequency transmissions, such as Ka-band at up to 30 GHz, bandwidth is becoming less of a constraint as gigabit and even ten gigabit satellite links are possible. Delay and jitter (due to Doppler shifting as a result of satellite motion), however, remain significant problems.

Round-trip transmission times to and from geosynchronous orbit (GEO) – where satellites park some 22,300 miles above the equator – are approximately 0.25 of a second, a long time in a communications network! The impacts of this amount of delay, as well as frequency jitter and other impairments, on applications can be severe, and must be tested before any satellite-based communication system is deployed.

Fortunately, ANUE's Network Emulators excel at satellite emulation! With ANUE Emulators, you can model delay, jitter and errors dynamically, as they would occur on a real satellite network.

If you're involved in designing, building or testing any of the following, ANUE Network Emulators can help you by providing satellite emulation capabilities:

- Free-space optics (FSO) – a line-of-sight technology that uses lasers to provide optical bandwidth connections that can send and receive voice, video, and data information on invisible beams of light.
- Defense shield – satellite communications are the backbone of the military's missile defense system, originally known as “Star Wars.”

- “Internet in the Sky” – using satellite links as the backbone for high-capacity network centric global communications systems.
- Global Area Networking – extending broadband services, multimedia, storage, transaction processing, and e-commerce applications to remote locations.
- Broadband GEO/Broadband LEO solutions – either satellite to ground or satellite to satellite communications.

Key features of ANUE Emulators that are beneficial for testing satellite transmissions:

- Doppler Shift Emulation – Automatically increase and/or decrease the delay time injected by the ANUE Emulator in increments as small as one part per million (ppm) to simulate the movement of satellites in relation to one another.
- Multiple protocol – ANUE's products work with SONET/SDH, Gigabit Ethernet, 10 Gigabit Ethernet, Fibre Channel, and 10 Gbps FEC rates.
- Real time full line rate handling of data – up to 10Gbps, regardless of frame size.
- Enormous amount of delay – With “Delay Doubler,” “Delay Tripler,” and even “Delay Quadrupler” options, ANUE Satellite Emulators enable up to
 - 50,000 km (31,000 miles) of delay at 2.5 Gbps rates (250 msec)
 - 300,000 km (186,000 miles) at one Gbps (1.5 sec), and
 - 200,000 km (124,000 miles) at 10 Gbps (1 sec).

Contact us for more info. Let us know how we can be of service to you.