

# satID® GeoSim

## Geolocation Signal Simulator

**KRATOS** | RT LOGIC



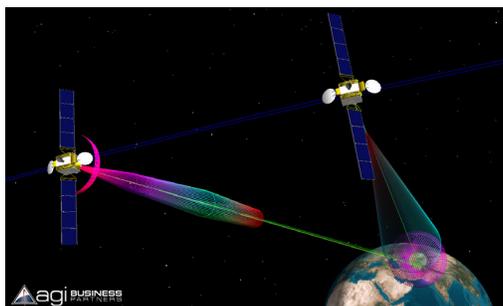
### Overview

Kratos RT Logic's satID® GeoSim is a precision hardware simulation system that accurately models geolocation scenarios. It perfectly recreates real-world RF signals received by a satID® Signal Geolocation System, adding the full set of physics effects imparted on signals as they travel to and from satellites. This exclusive technology enhances geolocation operations by sharpening operator reaction skills to real-world threats. This results in fast and cost-effective link restoration through efficient and accurate diagnoses.

### Product Description

satID GeoSim is an innovative and unique product based on Kratos RT Logic's precision channel simulation technology. Through a simple yet powerful and flexible user interface, operators specify ground locations for transmission and reception sites, choose satellites, and select settings for interference and reference signals. Based on these parameters, satID GeoSim's advanced signal processing hardware imparts the Doppler shift, time delay, and signal power appropriate for the requested geolocation environment. An entirely new capability in the geolocation industry, satID GeoSim lets users create rogue interference signals, then quickly identify their locations in a fully simulated environment, without diverting mission-critical SATCOM equipment.

satID GeoSim emulates interference and reference signals and can generate up to 14 additional signals to represent the spectrum of a typical satellite transponder. Grounded in detailed satellite orbital theory and in-depth RF propagation models, the engineers at Kratos RT Logic have created a full-fidelity simulator that outputs signals indistinguishable from those encountered in nature.



*satID GeoSim emulates real world signals traversing satellites in any position, in any condition, anywhere in the world.*

### Key Features

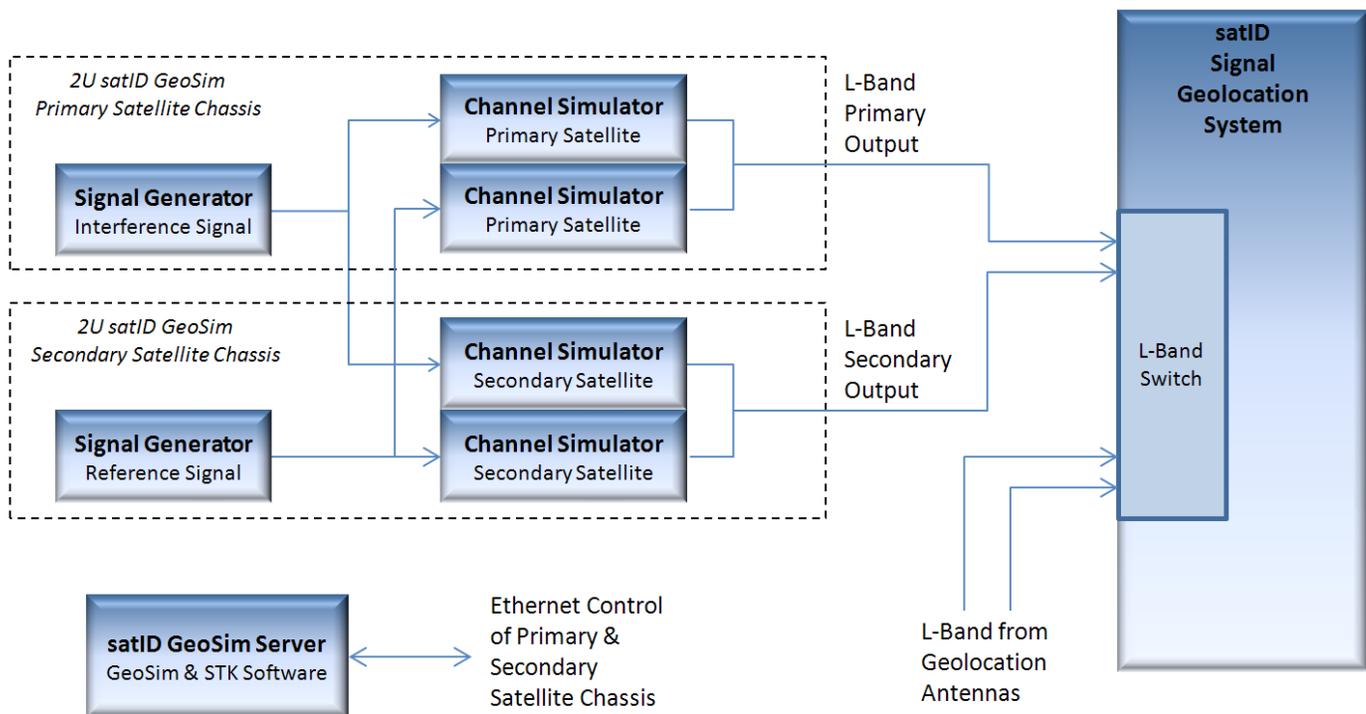
- Precision signal generation, indistinguishable from real-world signals
- Interoperability with all existing satID systems
- Intuitive graphical user interface
- 24/7 simulation of equipment locations and signals originating anywhere in the world

### Benefits

- Decrease interference resolution time and cost through operator training
- Increase training depth and breadth
- Maintain currency with emergent interference types and geolocation techniques
- Generate traceable and repeatable results
- Assess the feasibility of new geolocation scenarios
- Verify proper operation of geolocation systems

satID GeoSim is the first-of-its-kind geolocation test and training system, allowing commercial and military satellite operators to aggressively protect the performance and function of critical SATCOM links.

satID GeoSim can easily create signals that represent any satID ground locations, any satellite pairs, and with the interference and reference transmitters located anywhere in the world. This allows limitless 24/7 simulation of any geolocation scenario for comprehensive training, test, and verification.



*satID GeoSim emulates all signals and equipment feeding the UHF/L-Band inputs of the satID Geolocation System.*

## Operation

To understand how satID GeoSim recreates geolocation signals, it is helpful to review the technology utilized to locate the origin of interfering signals. The satID Signal Geolocation System is an accurate, fast, all-in-one solution for locating ground-to-satellite transmission sources. Powerful, flexible, and modular, satID uniquely blends complex science and algorithms with sophisticated hardware and Digital Signal Processing (DSP), resulting in an easy-to-use package for locating and identifying sources of interference due to equipment failure, operator error, intentional jamming, and unauthorized users.

The geolocation process is based upon a two-satellite location technique that uses a reference signal from a known location to locate a target signal. Each signal must be received and rebroadcast back to Earth by both satellites. To recreate this complex RF environment, satID GeoSim utilizes the RF signal emulation capabilities of Kratos RT Logic's precision Channel Simulator combined with the software modeling algorithms of Analytical Graphics, Inc.'s (AGI) Systems Tool Kit® (STK). This blend of powerful hardware and software gives satID GeoSim the ability to emulate any satellite, interference, and reference locations possible in an actual geolocation scenario.

By design, there is no control link between satID GeoSim and a satID Signal Geolocation System. This results in a fully realistic and effective training environment where scenarios introduced by a satID GeoSim operator must be encountered, analyzed, and responded to by a satID Signal Geolocation System operator, just as in the real world.

satID GeoSim offers a cost-efficient means for link protection professionals to stay current and well-trained on geolocation techniques. Prior to mission deployment, satID GeoSim also serves as a tool to assess the feasibility of a scenario to ensure proper coverage against a variety of realistic interference. Additionally, satID GeoSim provides system assurance testing for geolocation systems, ensuring peak performance of vital link protection systems.