orolia DEFENSE & SECURITY

Your Resilient PNT
Mission Partner

BroadSim

Software-Defined NAVWAR Simulator

What is BroadSim?

Orolia Defense & Security's BroadSim was developed to simplify the creation of advanced jamming and spoofing scenarios with Navigation Warfare (NAVWAR) testing in mind. BroadSim supports high dynamics, jamming, spoofing, alternative RF navigation, and encrypted military codes. Powered by Orolia's Skydel GNSS simulator engine, BroadSim is able to simultaneously simulate multiple constellations including: GPS, GLONASS, Galileo, Beidou and SBAS. With high-performing hardware, a robust and innovative software engine, and an intuitive user interface; BroadSim outperforms and exceeds features offered by the competition.

BroadSim 4U Simulator with Orolia's Skydel user interface

Why Choose BroadSim?

BroadSim is revolutionizing the GNSS industry because of its extraordinary flexibility, low cost, upgradability, and rapid development cycles. Leveraging Orolia's Skydel simulation engine and commercial-off-the-shelf (COTS) software-defined radios (SDRs), simulation of GNSS signals can be achieved at a fraction the cost of today's industry standards. The ability to generate military and multi-constellation signals on COTS hardware maximizes scalability, value, and time to market.

POWERED BY

skydel

Software	Hardware
1000 Hz simulation iteration rate	Size: 4U
Advanced jamming	Width: 19 in
Live sky time synchronization	Depth: 17.5 in
On-the-fly scenario re-configuration	Height: 7 in
6 DoF receiver trajectories	Weight: 33 lbs
Flexible licensing & upgradability	Power: 850 Watts
High-end performance (precision, resolution, ultra-high dynamic motion	Intel i7-7700 processor
Simulate hundreds of satellites in real-time using off-the-shelf graphics cards (GPU)	64 GB DDR3 Memory
Differential GNSS and multi-vehicle simulation (Real-Time Kinematics - RTK)	10 MHz and 1 PPS inputs/outputs for synchronization
Comprehensive and intuitive API (Python, C# and C++ open source client)	2x NVIDIA GPUs
Scalable and highly flexible architecture using software-defined radios	4 RF outputs (DekTec Radios)

Advanced Jamming
No additional hardware needed to generate jamming signals
Unlimited # of jamming signals generated on 1 RF output
Set power level, modulation, location for each jamming signal
Complete jamming control through the Skydel GUI and/or API
Specify the location and power of jamming transmitters: BroadSim calculates the jamming power at the receiver based on the location and jamming parameters.
*GPU limited

SIGNAL PROPAGATION & ERRORS SIMULATION

- Multipath
- Additive pseudorange ramps
- Satellite clock error modification
- Navigation message errors
- Ionospheric and tropospheric models
- Antenna pattern models
- Relativistic effects
- Pseudorange / ephemeris errors

CONSTELLATIONS

GPS Open: L1-C/A, L1C, L1-P, L2-P, L2C, L5

GPS Encrypted: L1-M-AES, L2-M-AES, L1-MNSA, L2-MNSA

GLONASS: G1, G2

BeiDou: B1, B1C, B2, B2A

Galileo: E1, E5A, E5B, E5 AltBOC, E6

QZSS: L1-C/A, L1C, L1S, L5, L5S

SBAS: WAAS, EGNOS, MSAS NavIC: L5

Alternative RF Navigation

SIMULATION CAPABILITIES

Signal Dynamics:

- Max relative velocity: 1,500,000 m/s
- Max relative acceleration: no limits
- Max relative jerk: no limits

Receiver Trajectory Simulation:

- Static
- Circle
- Car trajectory with integrated maps
- Import arbitrary tracks/routes from NMEA, CSV, or KML files
- Spacecraft (LEO/GEO orbits)
- Hardware-in-the-loop (HIL)

Operating System:

Custom Linux for security and performance

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