

The Orolia Skydel Portfolio

Software-Defined GNSS Simulation

The Skydel Simulation Engine

The Skydel Simulation Engine powers Orolia's advanced software-defined simulators using Graphics Processing Units (GPUs). With this approach, performance is scalable and can be adapted from simple to complex use-cases. Skydel was built with a focus on high-end performance and flexibility. It simulates civil and encrypted signals from global and regional navigation satellite systems, receiver trajectories with high dynamics, and advanced jamming and spoofing.



Shared benefits and interoperability

- Easy configuration with intuitive UI and automation
- Comprehensive API (Python, C#, C++, LabVIEW)
- Advanced signal customization and scenario creation
- Integrate jamming, spoofing and repeating with no additional hardware (CW, Chirp, AWGN, BPSK, Pulse, BOC, BFEA and IQ file)
- 1000Hz simulation iteration rate
- IQ file generation and playback
- Record and export user interactions as Python script
- Differential GNSS and multi-vehicle simulation (Real-Time Kinematics - RTK)
- Open source plugin architecture
- Hundreds of satellites simulated in real time
- On-the-fly scenario re-configuration & data logging
- Hardware In the Loop (HIL) simulation
- Updatability - upgrades only require software license unlocks, no additional hardware
- Orbit modification and custom fixed position
- Unlimited pseudorange additive ramps
- Navigation message modification/corruption
- Antenna position, angular offset and patterns
- Maximal relative velocity: 120,000 m/s
- Maximal relative acceleration: no limits
- Maximal relative jerk: no limits

Simultaneously simulate these codes

- GPS Open: L1-C/A, L1C, L1-P, L2-P, L2C, L5
- GPS Encrypted: L1-Y, L2-Y, L1-M-AES, L2-M-AES, L1-MNSA, L2-MNSA
- Galileo: E1, E5a, E5b, HAS Noise, PRS Noise
- GLONASS: G1, G2
- BeiDou: B1, B2, B1C, B2A
- QZSS: L1C/A, L1C, L5, L5S
- SBAS: WAAS, EGNOS, MSAS, GAGAN
- NAVIC: L5

Skydel is available to run on your own COTS hardware or with one of our Orolia turnkey systems



GSG-8

powered by Skydel

Advanced Software-Defined GNSS Simulator

- Option of 1 to 4 RF outputs
- Rack mounted, 4U chassis
- Configurable to meet your requirements
- Ideal for Aerospace, Critical Infrastructure and Commercial applications



BroadSim*

powered by Skydel

Advanced Software-Defined GNSS Simulator

- Supports Encrypted Military Codes (Y-Code, M-AES, and M-MNSA)
- Documentation and procedures for classified operations
- 2 GPUs and 4 RF outputs are standard
- Custom Linux operating system (RMF STIG support coming soon)
- Ideal for Military applications where GPS encrypted signals are required



Skydel Anechoic*

GNSS Simulator System for Radiated Over-The-Air Testing

Designed to test GNSS systems in an anechoic chamber, used to test CRPA/ multi-element antennas, antenna electronics and entire PNT systems.

- Supports up to 32 RF outputs
- Drive single, dual, or tri-frequency antennas
- Automatic antenna mapping, time delay and power loss calibration
- Calibrate your entire system in minutes



Skydel Wavefront*

GNSS Simulator System for Conducted Wavefront Testing.

Designed to test the jamming/spoofing resiliency of CRPA and multi-element antenna electronic systems, and for applications with high dynamics.

- Real-time automated phase calibration, phase coherence: $1^{\circ}1\sigma$
- Quickly generate spoofers, jammers, repeaters and alternate PNT sensors
- Scalable from 2 to 16 elements at 600+ signals per element
- Calibrate GNSS frequencies in seconds; an entire system in minutes

* Models with GPS encrypted signals are available through Orolia Defense & Security only (→ sales@OroliaDS.com).