



BROADSIM

Software Defined
GNSS Simulator

JAMMING + SPOOFING MADE EASY



WHAT IS BROADSIM?

BroadSim was developed to simplify advanced jamming and spoofing scenarios with Navigation Warfare (NAVWAR) testing in mind. BroadSim supports high dynamics, advanced jamming, spoofing and encrypted military codes. Powered by Skydel's SDX Global Navigation Satellite System (GNSS) simulator engine, BroadSim is able to simulate multiple constellations which include: GPS, GLONASS, Galileo, BeiDou and SBAS. Together with Talen-X's expertise in NAVWAR and Skydel's robust and innovative 1000Hz software engine, BroadSim outperforms and exceeds features offered by competitors.



**FLEXIBLE
PLATFORM**



**LOW
COST**



**RAPID DEV
CYCLES**



**HIGH
DYNAMICS**



**ADVANCED
JAMMING**



**ENCRYPTED
CODES**



**MULTIPLE
CONSTELLATIONS**

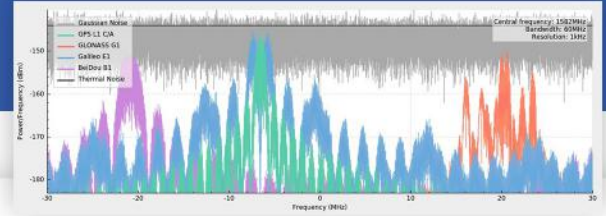
WHY CHOOSE BROADSIM?

BroadSim is revolutionizing the Global Navigation Satellite System (GNSS) industry because of its extraordinary flexibility, low cost, and the ability for rapid development cycles. Leveraging Skydel's 1000Hz SDX navigation engine and commercial-off-the-shelf (COTS) software-defined-radios (SDRs), simulation of GNSS signals can be achieved at a fraction of the cost of today's industry standards. The capability to generate military and multi-constellation codes on COTS systems maximizes scalability, value, and time to market.

TALEN-X
COMMUNICATE - NAVIGATE - EXCEL

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BROADSIM SOFTWARE

- 1000 Hz simulation iteration rate
- Advanced jamming
- Live sky time synchronization
- On-the-fly scenario re-configuration
- 6 DoF receiver trajectories
- Flexible licensing & upgradability
- High-end performance (precision, resolution, ultra-high dynamic motion)
- Simulate hundreds of satellites in real-time using off-the-shelf graphics cards (GPU)
- Differential GNSS and multi-vehicle simulation (Real-Time Kinematics - RTK)
- Comprehensive and intuitive API (Python, C# and C++ open source client)
- Scalable and highly flexible architecture using software-defined radios

BROADSIM HARDWARE

SIZE: 4U **WEIGHT:** 33 lbs. **POWER:** 850 Watts

WIDTH: 19 in **DEPTH:** 17.5 in **HEIGHT:** 7 in

- Intel i7-7700 processor
- 64 GB DDR3 Memory
- 10 MHz and 1 PPS inputs for synchronization
- 10 MHz and 1 PPS outputs
- 2x NVidia GTX 1080 Ti (GPU)
- 4x DekTec DTA 2115 SDR (4 RF outputs)

ADVANCED JAMMING

- Jamming signals generated in BroadSim – No additional hardware
- Unlimited number of jamming signals generated on 1 RF output
- Set power level, modulation, and location for each jamming signal
- Complete jamming control through the SDX GUI and/or API
- Option to specify the location and power of jamming transmitters: BroadSim calculates the jamming power at the receiver based on the location and jamming parameters
- Supports Blue Force Electronic Attack (BFEA)

SIGNAL PROPOGATION & ERRORS SIMULATION

- Multi-path
- Additive pseudorange ramps
- Satellite clock error modification
- Navigation message errors
- Multiple ionospheric models
- Multiple tropospheric models
- Antenna pattern models
- Relativistic effects
- Pseudorange / ephemeris errors

CONSTELLATIONS

GPS OPEN CODES:

L1C, L1-C/A, L1-P, L2-P, L2C, L5

GPS ENCRYPTED CODES

L1-Y, L2-Y, L1-M-AES, L2-M-AES
L1-MNSA, L2-MNSA (COMING SOON)

GLONASS: G1, G2

GALILEO: E1, E5a, E5b

BEIDOU: B1, B2

SBAS

SIGNAL SPECIFICATIONS

SIGNAL DYNAMICS

- Maximal relative velocity: 120,000 m/s
- Maximal relative acceleration: no limits
- Maximal relative jerk: no limits

RF SIGNAL LEVEL (GNSS)

- Output Power: -80 to -50 dBm
- Dynamic Range: -45 to +30 dB
- Total Range: -125 to -20 dBm

RF SIGNAL LEVEL (JAMMING)

- Output Power: -80 to -25 dBm
- Dynamic Range: -45 to +30 dB
- Total Range: -125 to +5 dBm