

BroadSim Wavefront

Software-Defined CRPA Simulation System

A Powerful and Proven Platform

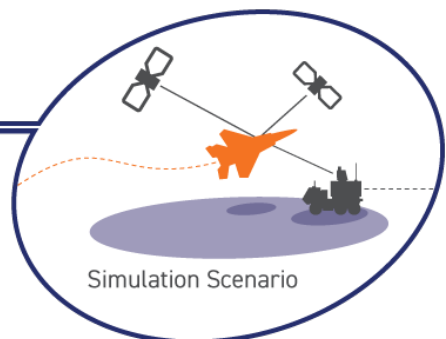
Protecting your GNSS systems from jamming and spoofing is more critical now than ever before. Leveraging the same proven software-defined architecture as our BroadSim platform, Orolia Defense & Security developed BroadSim Wavefront to enable easier and more affordable CRPA receiver testing.



Pictured Above: 4-Element BroadSim Wavefront portable unit

Why Develop a New Wavefront Simulator?

- High-end PNT systems are using AJAS - very few Wavefront simulators exist
- Wavefront simulators are expensive - standard configurations can cost millions
- Jamming / spoofing is often not a part of the solution - meaning the user must integrate additional hardware
- Scenario creation is complicated and limited - requiring trained, expert PNT engineers



STATUS QUO

- Difficult calibration routine
- Physically large and not scalable
- Custom one-off solutions
- Limited or no API control
- Limited spoofing and repeating capabilities

Scalability

4 to 16 tri frequency antenna elements

4 outputs / element (Ex. GNSS L1/L2, Interference L1/L2 - enables higher dynamic range)

Software-Defined System

IQ generated in GPU not FPGA

RF generated in SDR (Software-Defined Radio)

Flexible, affordable, scalable

Rapid development cycles

Operational Features

Max J/S: 130+ dB

Simulate 1000+ signals/element

Space simulation: LEO and GEO

Multipath (3 echo's/PRN/Code)

PXE (pixie) system architecture - single computer operation

Continuous phase calibration

Real-time automated calibration

Phase Offset: $\pm 1^\circ \sigma$

WITH BROADSIM WAVEFRONT

- Scalable and affordable
- Commercially available
- Easy to use and calibrate
- Robust API: C++, C#, and Python
- Jamming, spoofing, and repeating

Automatically Calculate

Propagation delays

Doppler shift due to dynamics

Power loss

GNSS Simulation – 1000 Hz

GPS C/A, L1C, L2C, L5, P, Y, AES-M, MNSA

GLONASS G1 and G2

Galileo E1, E5a and E5b

BeiDou B1 and B2

SBAS L1 and L5

Interference

Integrated into the software (GUI and API)

Simultaneously simulate multiple threats

Dynamic transmitters, user-defined waveforms

Jamming, spoofing, repeating

Choose and Control

Interference location and trajectory

Antenna locations, pattern and orientation