ELECTRONICS & DEFENSE

GSG 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 GSG-8 platform, Safran developed GSG Wavefront to enable easier and more affordable CRPA receiver testing.

Why Develop a New Wavefront Simulator?

- High-end PNT systems are using AJAS - very few Wavefront simulators exist
- Existing simulators are not prepared to adapt to future needs (Alternate PNT signals and sensors)
- Jamming/spoofing is often not a part of the solution - the user must integrate additional hardware
- Scenario creation is complicated and limited - requiring trained, expert PNT engineers

Safran Electronics & Defense is with you every step of the way, building in the intelligence that gives you a critical advantage in observation, decision-making and guidance.

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Technical Specifications

Pictured Above: 7-Element GSG Wavefront System

Pictured Above: Wave-front Node, generates IQ data per each element

STATUS QUO

- Calibration takes hours/days and is not automated
- Physically large and not scalable
- Custom one-off solutions
- Limited or no API control
- Limited spoofing and repeating capabilities

WITH GSG WAVEFRONT

- Automated calibration process takes minutes!
- Commercially available
- Easy to use and calibrate
- Robust API: C++, C#, and Python
- Jamming, spoofing, and repeating

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
1,000 Hz iteration rate
Simulate 600+ 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: ±1° 1σ

Automatically Calculate
Propagation delays
Doppler shift due to dynamics
Power loss

GNSS Simulation – 1000 Hz
GPS C/A, L1C, L2C, L5, P
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

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