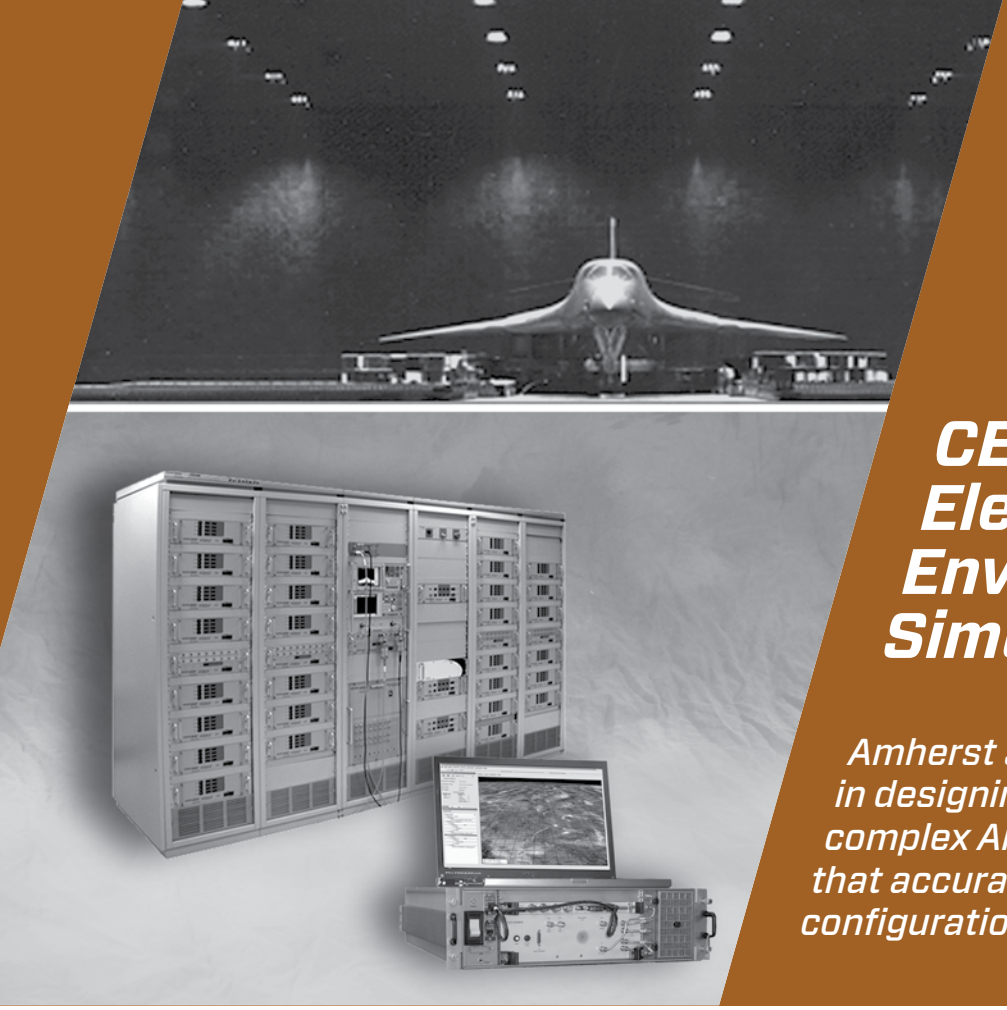

THE VALUE OF PERFORMANCE.

NORTHROP GRUMMAN

CEESIM: Combat Electromagnetic Environment Simulator

Amherst Systems is the industry leader in designing, delivering and qualifying complex Angle of Arrival (AOA) systems that accurately reflect the SUT's receiver configuration.

The Combat Electromagnetic Environment SIMulator (CEESIM) RF simulator provides simulation of multiple, simultaneous emitters and static/dynamic platform attributes required to faithfully simulate true-to-war conditions. Simulations of this quality offer the most cost-effective means of testing and validating effectiveness of sophisticated EW equipment. In its various configurations, Amherst Systems' CEESIM generates complex, dynamic electromagnetic environments for direct-injection or free-space radiation into EW systems with unmatched fidelity, accuracy, and affordability. With CEESIM's High Fidelity Intrapulse Modulation (HFIM) capability, realistic EW and Communication, Navigation, and Identification (CNI) signal environments can be simulated with a variety of complex modulation on pulse characteristics. HFIM functionality provides the highest level of IMOP/UMOP, pulse shaping and digital/analog signal modeling available.

Multi-Spectral Simulation Environment

Amherst System's product family works seamlessly together to provide a complete multi-spectral simulation environment by combining its CEESIM, Real-time IR/EO Scene Simulator (RISS), and Signal Measurement Systems (SMS). Synchronization of these products is achieved through the Synchronizer Controller Subsystem (SCS) product which allows for a coordinated, time-synchronized simulation of an environment for multiple sensors.

Types of EW Systems Tested

- Radar Warning Receivers (RWR)
- Electronic Countermeasures (ECM)/Electronic Attack (EA)
- Electronic Support Measures (ESM)
- Landbased/Airborne/Shipboard EW systems
- SIGINT/ELINT/COMINT systems

Typical Applications

- EW & ESM Receiver Design and Test
- Mission Planning/Rehearsal
- Airframe Avionics Integration
- ECM effectiveness evaluation
- Anechoic chamber test and evaluation
- Mission Data Verification
- Pierside/shipboard test and training
- Receiver processing algorithm design support & test
- Hardware-in-the-Loop and Man-in-the-Loop testing

System Under Test (SUT) Receiver Modeling

CEESIM is unmatched in its ability to model and stimulate Amplitude, Phase/Amplitude, Phase/Amplitude/Time Difference of Arrival (TDOA) AOA systems. Antenna data can be calculated using our proven SUT antenna modeling algorithms or actual measured data can be

imported into the CEESIM. CEESIM has benefitted from generations of development and we have over 35 years experience in the development of sophisticated Phase/Amplitude/TDOA AOA systems. Our experience in Phase/Amplitude/TDOA AOA Modeling/Accuracy significantly reduces your technical and schedule risk.

Commonality Throughout the CEESIM Family

CEESIM emitter and scenario element libraries provide compatibility among all CEESIM configurations. Compatibility across systems enables use of this data throughout the EW system test process and life cycle. As part of the Amherst Systems family of simulators, each CEESIM — whether it be a full-scale laboratory configuration or one of the portable packages — produces signals with the same high fidelity.

CEESIM Features

- Direct-injection (RF, Digital, IF, Video) and Free-Space Radiation configurations
- 3D, drag and drop graphical user interface (GUI)
- Control Computer with Linux Operating System
- User-defined platform , emitter and scenario element libraries for ease of scenario- building
- Commercial off-the-shelf (COTS) design
- RF element for time-synchronized, multi-spectral testing; can be synchronized with other simulators for true multi-spectral testing
- EW and CNI/CommSim signal simulation

Fully dynamic simulations, including operator or external control of event and emitters

- Multi-SUT modeling capability
- Real-time external control (Scramnet/Reflective Memory)
- Distributed simulation compatibility (DIS/HLA)
- Standard Ethernet and MIL-STD 1553 interface control
- Dynamic Tracking and Electronic Scanning with Interrupt capabilities to model today's emerging threats
- Data import capability (Digital PDW, XML Import, ASCII Import)
- Reactive threat emitter capabilities with optional Signal Measurement System (SMS)

Up to 128 RF Sources

- Extendable frequency coverage from VHF to Millimeter Wave
- True pulse-on-pulse and pulse-on-CW capability
- Frequency Locked Oscillator (FLO) or High Speed Synthesizer (HSS) sources

Extensive Post-Test Analysis Capability

- Real-time Digital PDW storage for playback
- Historian utility records all test events

Standard RF Interfaces

- From omnidirectional to over 100 ports of AOA modeling per frequency band
- Amplitude Angle-of-Arrival (AOA) simulation
- Phase AOA simulation
- Time Difference of Arrival (TDOA)/ Frequency Difference of Arrival (FDOA) simulation
- Calculated or measured model available for SUT antenna modeling
- Three dimensional transmit and receive antenna polarization modeling: mismatch modeled on a pulse-by-pulse basis
- Long baseline and short baseline interferometry modeling
- Spinning and "staring" antenna modeling

Up to 8,192 instantaneous emitters and platforms

- Modular/Scalable architecture
- Real-time Geometry on Pulse
- Six Degrees of Freedom (DOF) modeling for all platforms
- Polarization, ducting, atmospheric propagation
- Third-party tracking, terrain masking, and multipath
- Fully automated calibration and fault test applications
- Continuous RF and digital Built in Test

Unmatched Signal Fidelity

- Complete intrapulse modulation capability (LFMOP [chirp], DFMOP, PMOP, and AMOP) for true UMOP simulation
- Precision PRI timing for simulation of individual emitter crystal clocks
- PRI/Frequency/Pulse/Scan Synchronization
- Digital and Analog Communication signals (QAM, FHSS, DSSS, SSB, DSB, FM, AM and many others)

For more information, please contact:

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