2025 Spirent Federal PNT Training Seminars

Planned Agenda – Subject to Change

Theme: Navigation Warfare (NAVWAR) Simulation for PNT Testing

Day 1

Time	Event	
7:30	Registration & Breakfast Begins	
8:30	Orientation	
8:45	**State of NAVWAR**	**Session 1**
9:45	Break with Refreshments	

Scenario Generation Sessions

PNT experts will guide attendees step-by-step through creating, executing, and analyzing NAVWAR scenarios on a Spirent simulator connected to a live GPS receiver.

	Beginner User Track *General Session Room*	Experienced User Track *Breakout Room*
10:00	**NAVWAR Fundamentals I** **Session 2b** **Scenario description:** The jamming scenario occurs on an Army test range. A ground-based receiver tracking truth GPS signals navigates through multiple static GPS jammers. As time permits, the group will experiment with audience input on jammer modifications.	**Advanced NAVWAR I** **Session 2e** **Scenario description:** The spoofing scenario occurs off the coast of San Diego. An aerial receiver with circular motion tracking true GPS encounters high-powered jammers, followed by a spoofer. Jamming is subsequently removed, and the spoofing signal slowly deviates from the true trajectory.
11:30	Lunch	

Combined User Tracks
General Session Room

Time	Event	
12:30	**Beyond MEO GNSS** **Session 3** **Scenario description:** The space-based scenario models a space vehicle (SV) travelling beyond medium Earth orbit (MEO) leveraging simulation capabilities for lunar, GEO, and even interplanetary PNT applications. Attendees will learn how to model GNSS signal dynamics and side lobes for receiver tracking beyond the constellation, including setting up custom vehicle trajectories, receiver antenna properties, and GNSS transmit antenna patterns.	
2:00	**CRPA Testing**	**Session 4**
3:30	Break with Refreshments	
3:45	**Complementary PNT** • LEO PNT • Inertial & sensor fusion	**Session 5**
5:00	Happy Hour at the Venue	
6:00	Dinner at the Venue	

Day 2

7:30	Breakfast Begins

Scenario Generation Sessions
The test setup mirrors that of day 1, with users building the scenario alongside the instructor and analyzing results on a live receiver connected to a simulator.

	Beginner User Track *General Session Room*	Experienced User Track *Breakout Room*
8:30	**NAVWAR Fundamentals II** **Session 6b** **Scenario description:** The spoofing scenario builds upon day 1 by creating a static spoofer transmitter and spoofer signal with a static position offset. Jamming signals will be modified as necessary to maximize spoofer effectiveness at a specified time and location. As time permits, we will experiment with spoofer modifications that add receiver clock deviations.	**Advanced NAVWAR II** **Session 6e** **Scenario description:** The scenario involves constructing spoofers with a focus on GPS time manipulation and message modifications. Participants will leverage power scripting with a remote interface to implement these techniques, which require executing various real-time scenario commands in rapid succession.

9:45	Break with Refreshments

Combined User Tracks
General Session Room

10:00	**Space-based NAVWAR** **Session 7** **Scenario description:** The scenario models an orbiting SV as a spoofer. A ground-based receiver will be configured to observe the effect seen from the space-based spoofer. This application takes aim at theoretical space-based PNT threats, and how they might affect user equipment on the ground. Then, a modified scenario will swap spoofer and receiver, putting the spoofer on the ground and the receiver under test onto the SV to characterize GPS receiver performance for an SV orbiting below the GPS constellation. With the inclusion of a ground-based spoofer, the test application shifts to PNT situational awareness, enabling testing of space-based PNT threat detection.

11:00	**Field Testing in NAVWAR Applications** **Session 8** • Live-sky synchronization for spoofing and anechoic chambers • Record & playback at test events
11:30	Lunch
12:30	**High Dynamic Testing with Remote Motion** **Session 9**
2:00	**PNT Roadmap** **Session 10**
2:30	Break with Refreshments & CUI Sign-in
2:45 – 4:00	**CUI SESSION – US Citizens Only, Visit Request & ID Required** **Session 11** **GPS M-Code** • How to test GPS M-Code • MNSA, AES, SDS, Regional Military Protection (RMP)