

2025 Spirent Federal PNT Training Seminars

Agenda

Theme: Navigation Warfare (NAVWAR) Simulation for PNT Testing

Day 1

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 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.	Session 2b	Advanced NAVWAR I 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		
12:30	Beyond MEO GNSS 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.		Session 3
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	PNT Roadmap Session 8	
11:30	Lunch	
12:30	High Dynamic Testing with Remote Motion Session 9	
2:00	Field Testing in NAVWAR Applications Session 10 - Live-sky synchronization for spoofing and anechoic chambers - Record & playback at test events	
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)	