GNSS Vulnerability Test System

Challenge

Hardening GPS/GNSS receiver applications against the threat of spoofing

Solution

Orolia GPS/GNSS simulation system with easy control of "real" versus "faked" signals

Results

Full understanding of how a system reacts in a spoofing situation and the effectiveness of mitigation techniques or countermeasures

"Understanding the reaction of GPS-based navigation in various spoofing scenarios is the key to hardening the system against spoofing attacks."

The threats to GPS-based navigation systems are ever-increasing. The risk of intentional disruption of GPS signals is moving from simple jamming to a much higher-level of sophistication. Spoofing — an attempt to deceive by broadcasting false GPS signals — can be devastating, leading to loss of assets or, worse, lives. Although testing the sensitivity to jamming is basic functionality of GPS simulators, measuring the effects of various spoofing scenarios requires a high degree of complexity. Orolia is at the forefront of testing the vulnerabilities of GPS-based navigation and now offers its capability as a GNSS Vulnerability Test System.

Through the integration and synchronization of two Orolia GNSS RF generators, the user has full control of the critical parameters to test the susceptibility to spoofed signals, compared to simulated 'live sky', with varying degrees of the alignment of time, position and RF power. And these tests can be performed under varying motion trajectories, either assuming the spoofer can anticipate the motion or not, and any other condition.

Testing vulnerabilities to any navigation application with a GPS/GNSS simulation system is simply the best way to understand risks and for designing and evaluating countermeasures. For more information about Orolia's work in evaluating the effect of GPS spoofing attacks, see our technical paper, Testing GNSS Receivers to Harden Against Spoofing Attacks.
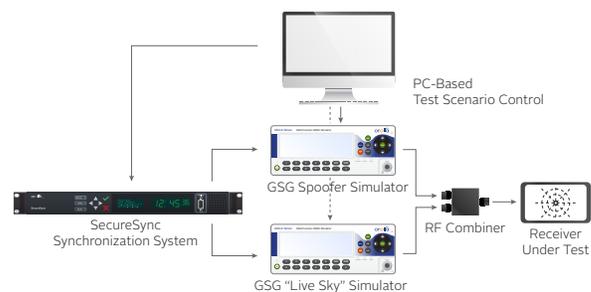
Orolia's GNSS Vulnerability Test System consists of two simulators, a time and frequency synchronization unit, RF connectors, and PC control system. It comes with training and start-up assistance as well as a service plan so you get the most out of your testing program.