



Synchronizing Resilient PNT Test Range Data

Why This Case Study Is Relevant:

Military test ranges have complex requirements for Positioning, Navigation and Timing (PNT) data. Flexible, rugged and innovative GPS/GNSS-based solutions ensure that recorded test data is synchronized with extreme accuracy and reliability.

Background

A defense customer needed a time synchronization solution for test range data to replace a legacy radio frequency distribution system. Data recorded from test missions at various locations must be time stamped for data center synchronization across the communications network, since accurate data is critical for evaluating system performance in battlefield scenarios. Customer requirements included:

- Various locations for rack mounts in fixed buildings as well as field deployable sites
- Mobile units that could be transported to multiple test sites across the range
- Rugged to withstand environmental factors such as extreme temperature and vibration fluctuations
- Small Size, Weight and Power (SWaP)
- Multiple signal outputs such as IRIG AM/DCLS, 10 Mhz and 1PPS
- Cost-effective solution, with demonstrated performance and rapid deployment



Solution

Orolia provided a GPS based solution that included VersaSync, a mobile high-performance GPS master clock and network time server, and SecureSync®, a secure time and frequency platform for rack-mounted server rooms. Both systems timestamp recorded sensor data with precision to ensure that multiple test events within the same time frame can be analyzed accurately. In addition, they met the customer's signal output, small SWaP, environmental and mobility requirements.

VersaSync is compact and rugged, to meet the operational requirement to transport units around the range, stopping to gather data at various locations during tests. Its small footprint and versatile software configurable inputs/outputs were an ideal solution to meet the requirement that the timing platform be transportable for various types of field tests. VersaSync was also able to meet the environmental specifications including low-phase noise options to reduce signal interference from vibration.

SecureSync was used for instrumentation systems that could accommodate a larger timing equipment installation in rackmount test racks. SecureSync is the only time and frequency reference system listed on the Defense Information Systems Agency (DISA) Department of Defense Information Network (DoDIN) Approved Products List (APL). All Orolia timing systems offer the flexibility of configurable input and output options.

Result

Military test range sensors collecting data for various tests need to be timed together for accurate results, to inform critical decision-making on battlefield mission systems. Orolia's VersaSync and SecureSync timing and frequency platform solutions provide the accuracy to collect and synchronize data with the flexibility of fixed or mobile form factors, and the configurability of output signals. They are also cost effective, proven solutions available for rapid deployment worldwide. The customer is now able to meet their test data synchronization requirements with precision, reliability and confidence.