technology brief

eLoran as a SecureSync® Timing Reference

spectracom

What is eLoran?

- eLoran is the latest enhancement to the terrestrial-based LOng-RAnge Navigation system.
- Nine nations are operating Loran-C or eLoran stations.
- eLoran is considered a candidate to improve the resiliency of PNT applications.

eLoran as a backup to GPS

- Spectracom has integrated an eLoran Timing Receiver as a timing and synchronization reference.
- When configured as a back-up to GPS, the eLoran signal is used for precision timekeeping when the satellite signals are not available due to interference or jamming.
- This capability is backwards compatible with all fielded SecureSync units without returning to the factory.

The desire to protect critical infrastructure from sole-reliance on GPS and other satellite-based systems (GNSS) has resulted in a renewed interest in the Loran system for PNT services. Spectracom offers its SecureSync time and frequency reference system with a combination of GNSS and eLORAN timing sources.

SecureSync manages multiple, user-prioritized time and frequency references from a list of synchronization sources that now includes eLoran. In this case, GNSS is configured as primary. If the satellite signals are lost, eLoran is used for synchronization. When the primary GNSS reference is restored, then the SecureSync system reverts back to it. Both scenarios include status indication and alerts if configured.

For rapid deployment and efficiency, we use an eLoran timing receiver in a 1U 19" rack enclosure from UrsaNav, model UN-152B. The SecureSync receives the timing data via an RS232 datastream and the UTC on-time point via its precise 1-pulse-per-second. The receiver is connected to the model UN-008M eLoran H-field Antenna. The result is an increased reliability by enhancing the resiliency of the core of time-sensitive applications due to a high degree of signal diversity.

- GNSS from the sky vs. eLoran from ground transmitters
- GNSS very low transmit power vs. eLoran very high transmit power
- GNSS high frequency vs. eLoran low frequency