



SATELLITE TIME AND LOCATION (STL)

increased PNT resilience through greater signal strength than GPS, exceptional reliability, and high security

STL from Satelles® provides a resilient, alternative PNT service that is complementary to GPS/GNSS. Using the Iridium® Low-Earth-Orbit (LEO) satellite constellation, STL is unique in that its signals are powerful, extremely secure, and available today worldwide.

- ▶ STL’s high-power signals are 1,000 times stronger than GPS, allowing them to penetrate deep into GPS-challenged environments where signals are obstructed or degraded, including indoors and underground.
- ▶ An innovative mesh architecture of 66 cross-linked LEO satellites forms a global network in space to ensure a robust time and location service everywhere — including all urban and rural locations.
- ▶ The complex, overlapping beam patterns of the satellites combined with signal authentication techniques allow Satelles to deliver a trusted time and location capability that is highly secure.
- ▶ Timing solutions are available with sub-microsecond and sub-hundred-nanosecond accuracies, with near zero long-term drift.

SPECIFICATIONS

Clock Stratum Level	<ul style="list-style-type: none"> ▶ Stratum 0 source ▶ Supports Stratum 1 PTP Grandmaster Clock / Primary Reference Source (PRS)
Timing Accuracy	<ul style="list-style-type: none"> ▶ 60 nanoseconds, 1-sigma with OCXO oscillator ▶ 100 nanoseconds, 3-sigma with rubidium oscillator ▶ 180 nanoseconds, 3-sigma with OCXO oscillator
Timing Stability	▶ Less than 1 nanosecond of UTC(NIST) after 25 days (source: U.S. NIST)
UTC Traceability	▶ STL timing is traceable to UTC(USNO) via multiple, geographically distributed GPS tracking sources
Network Connection	▶ Not required
Signal Power	▶ 30 dB stronger than GPS L1 C/A
System Availability	<ul style="list-style-type: none"> ▶ 24x7 availability globally ▶ Due to higher signal power, availability extends to most indoor locations, many sky-occluded environments, and many locations with unintentional or intentional radio interference
Security	▶ Signal includes authentication features that make intentional misdirection exceptionally difficult for attackers
Technology Readiness Level	▶ TRL 9 — System is commercially available today (source: U.S. DOT)
System Resiliency (timing applications)	▶ For either a localized GPS denial of service attack or GPS meaconing attack, STL provides a Stratum 0 UTC traceable timing reference at Level 4 resiliency with an accuracy of better than 1 microsecond 99.999% of the time (<i>see note</i>)

Count on Assured PNT with STL

Satelles offers alternative PNT at levels of stability, reliability, and trust required by commercial enterprises and government entities for critical infrastructure applications. Customers use STL either as a primary source of PNT — for example, 5G deployments where GNSS is unavailable indoors or when distributed PTP cannot meet needed accuracies — or as an essential contingency capability to protect the operations of PNT-dependent systems and ensure survivability and resilience. The service is globally available today with the performance required by private sector leaders and civil government officials.