Case Study

Driving Autonomy Forward with Swift Navigation

The Customer

Applications such as connected autonomous vehicles, precision agriculture and mining are driving requirements for high-accuracy precise positioning solutions. Swift Navigation offers flexible correction services that enable accuracy down to 10 cm with quick convergence times, servicing the needs of a broad spectrum of autonomous and semi-autonomous platforms.

The Challenge

Swift needed to verify the effectiveness of its data correction services across the U.S. that involved a test drive from the West coast to the East coast, and back again. To gain value beyond initial validation, Swift desired the ability to record portions of this cross-country journey for repeatable use in its labs.

The requirements for this project included capturing GNSS data for all available constellations on L1, L2, and L5, as well as both IMU and correction data. Because of the precise nature of the solutions being developed, it was vital that all of this information was captured in the highest possible fidelity, without increased noise. Lastly, due to the nature of this journey, it was also necessary to be able to record for long periods of time.

The Solution

Spirent's GSS6450 enabled high bit-depth record and playback of the RF signal environment. Three independently configured RF ports and high bandwidth capability meant the GSS6450 was able to capture multiple areas of the RF spectrum concurrently—all with high fidelity.

With Spirent's continued cooperation and consultation, the GSS6450 was installed into Swift's test drive vehicle with an 80TB RAID, alongside a SPAN receiver for truth data analysis.

Swift's drive testing took in the full range of weather conditions

The Result

Many hours of usable GNSS data were collected by Swift, delivered at the quality required so that these recordings could be used as repeatable scenarios for lab testing into the future. In addition to the varying highway drive scenarios, the GSS6450's high-fidelity recording of urban environments enabled detailed comparison with the truth data provided by the SPAN receiver to assess the impact of increased multipath and obscuration on the performance of the solution.

GSS6450 RF record & playback system

> Due to the cost and time commitment of this project, there was no room for error. Spirent's GSS6450 delivered the flexibility we needed to keep our project scope broad, while still delivering the absolute performance required to be relied upon in the field and in the lab. The recordings we have analyzed have been of an extremely high quality, with the ability to track even low elevation satellites in challenging environments upon replay.
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Contact Us

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