

An Analysis of Clock Performance in GNSS Receivers for CORS Applications

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SUMMARY

Timing plays a crucial role in the functioning of Global Navigation Satellite Systems (GNSS). While high-end atomic clocks are employed in GNSS satellites, quartz clocks are commonly used in GNSS receivers. For Continuously Operating Reference Stations (CORS) applications, there are both high-end receivers equipped with external atomic clocks and more cost-effective alternatives.

This study focuses on analyzing the clock performance of receivers belonging to different categories using daily solutions obtained through Precise Point Positioning. The receivers under investigation include the Trimble NetR9, Septentrio mosaic-X, and a Septentrio POLARX5TR with an external H-maser clock. The analysis reveals significant differences in clock performance when considering Allan variance. However, it's worth noting that the accumulation of clock offset data over 7 days did not reveal the presence of low-frequency noise.