Abstract

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Examining the Benefits of Multi-GNSS Constellation for the Positioning of High Dynamics Air Platforms Under Jamming Conditions

The impact of jamming on high dynamic GNSS commercial receivers has become the interest of many research studies. In this paper, the effect of applying Continuous Wave (CW) single tone jamming signal and Swept Interference jamming signal is evaluated on GNSS commercial receiver at high dynamic mode of operation. This analysis uses satellite availability, Carrier to Noise ratio (C/N0), Dilution of Precision (DOP), the percentage of solution availability, the minimum number of available satellites at different jamming power levels and position and velocity accuracy as evaluation metrics to investigate the benefits of combined GPS/GLONASS under both jamming types. The experiment was conducted using the SPIRENT GSS6700 combined with the Interference Signal Generator (ISG) to provide the desired signals to the NovAtel OEMV commercial receiver under high dynamic scenario. Results are compared with using only GPS and combined GPS/GLONASS and show a significant improvement in the availability of position solutions when using combined GPS/GLONASS under both jamming types.