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PRELIMINARY ESTIMATION ON POINTING ACCURACY OF JAPANESE QUASI-ZENITH SATELLITE-1 (MICHIBIKI) L1-SAIF

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Abstract. Japanese Quasi-Zenith Satellite-1 (QZS1) named MICHIBIKI was launched in September, 2010. This paper shows a preliminary estimation of positioning accuracy of the QZS1. The mission of QZS1 is to raise the positioning accuracy of GPS. The QZS1 has 3 positioning signals named LEX, L1-SAIF and L1-CA. LEX and L1-SAIF are auxiliary signals based RTK and differential measurement using revised information derived from the electronic reference points managed by the Geographic Survey Institute of Japan respectively. QZS1 L1-SAIF signal is expected the accuracy less than 1 m. In order to estimate the positioning accuracy of QZS1 L1-SAIF, the positioning accuracy of QZS1 were compared with the accuracy of GPS single measurement. As the results, for an example, GPS accuracy is 3.17 m in latitude and 3.90 m in longitude, and L1-SAIF accuracy is 1.68 m and 1.80 m respectively. This result indicates L1-SAIF provides high accuracy than GPS. But others result showed, GPS accuracy is 1.57 m in latitude and 1.26 m in longitude and L1-SAIF accuracy is 4.03 m and 0.92 m respectively. Conclusions are; (1) L1-SAIF signal were obtain submeter accuracy. (2) Almost L1-SAIF signal were obtained high accuracy better than GPS. (3) In worst case, L1-SAIF signal were obtained worse accuracy than GPS. The reason is assumed the influence of the East Japan tremendous earthquake. As the electronic reference points were moved by the earthquake, the reinforcement value derived from the electronic reference points might be incorrect.

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