

EXPERIMENT OF THE HIGH ACCURACY POSITIONING BY
QUASI-ZENITH SATELLITE MICHIBIKI OF JAPAN

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KEY WORDS: QZS, LEX, GNSS, High Accuracy

ABSTRACT: GNSS positioning technology has important role in our life. People have to obtain location information by GNSS including GPS. As is well known, satellite positioning has to receive signals from more than four satellites. However, mountainous area of Japan is covered with forest and there are lots of tall buildings in urban area. This is one of the reasons why we cannot obtain the exact position information by multipath and cycle slip. In future ubiquitous society, satellite positioning should not be affected by these. Japanese government launched QZS (Quasi-Zenith Satellite) which is the first satellite of QZSS (Quasi-Zenith Satellite System) in 2010. At least four satellites are needed for construction of QZSS. Four QZSS satellites are due to be arranged by 2018. QZSS has a possibility of improves positioning accuracy and reliability. QZS can remain over long time near the zenith in Japan. This means that observed time and an observing site become large compared with GPS positioning. QZS can also send short messages such as emergency warnings simultaneously to everyone with a mobile phone in time of disaster. The experiment was conducted 4 times. The purpose of the first and the second experiment were to conduct the demonstrated experiment which uses the LEX signal from QZS at HOKURIKU district in Japan, and data before and after a satellite becomes a shadow of a building was checked. The purpose of the third and the fourth experiment on moving is to get moving position information and moving images. On the moving experiments, positioning accuracy of VRS-GPS was better than that of LEX. In addition, it became clear that there are some problems in the LEX signal from a QZS. In this paper, we reported demonstrated experiments of accuracy comparison between VRS-GPS and QZS at HOKURIKU district of Japan.