Performance of ionosphere-free GPS observation in network RTK

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RTK positioning accuracy is appropriate only for short distances from reference station. This is due to decorrelation of the distant-dependent biases such as atmospheric biases and orbital errors. Permanent reference station network are used to estimate the bias model to recover the residual biases resulting in cm-accuracy as required for surveying type applications. It is necessary to fix the ambiguity numbers of reference stations to their correct integer numbers to achieve cm-accuracy. In this paper, performance of ionosphere-free observations with float ambiguity numbers is investigated based on the network-based approaches. Five permanent reference stations in AL-BORZ network in IRAN have been used to simulate the practical realization of this idea. The results shows the improvement of the accuracy over medium base lines up to 50% .