

# Assessing the Multi-Base Station GPS Solutions

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## ABSTRACT

A permanent network of GPS receivers, the Bravida Network, was established in order to test the Multi-Base Station (MBS) Real Time Kinematic (RTK) system from the German company Trimble Terrasat. The Bravida Network is located in South-East Norway and consists of five stations separated by approximately 70km.

Empirical tests carried out in June 2001 indicate that the MBS approach is well suited for many applications in land surveying. The carrier phase ambiguities are resolved within a reasonable amount of time in all data sets. The accuracy of the computed rover coordinates seems adequate for many applications, as 95% of the true errors lie within approximately 4cm horizontally and 8cm vertically.

There seems to be a stronger autocorrelation present in the MBS solutions than in the standard RTK solutions using one reference station only. Autocorrelation has a serious impact on reliability measures, and this fact raises questions concerning the usual “averaging of coordinates”-approach widely used in geomatics.

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