UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

SOLVING POSITION ON EARTH
BY PSEUDORANGE EQUATION

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

One of the way to find location on earth is by using the pseudorange equation. Pseudorange equation is closely related to speed equation and the signal travel in the speed of light but only in vacuum condition where there are no barrier at all. Unfortunately, the atmosphere, about 60 km to 1000 km from the sea level, there are ionosphere layers that lead to the delay of signal transmission. This problem cause the speed of light to be slower. In this project, the speed error will be ignored to know whether it makes significant difference in determining a location on earth to know whether the speed error is significant to be taken into account. By setting four satellites on XYZ-plane, the location of the receiver is determined. Kampung Belukar, Machang, Kelantan is the place to compare the actual position and results obtained. The result shows that the position earned by ignoring speed error is too far from from the exact location. This shows that speed error is significant in determining the location on earth with pseudorange equation. Future work should be done to investigate on the speed error calculation.

1 INTRODUCTION

In this project, in solving position on earth, pseudorange equation is used. In ionosphere, there are many ionized particles that act as a block in transferring data speed from satellite to receiver. Therefore, this will cause the speed to slow down and this is called as speed error. As the overall mission of the project is to determine the extent of difference in result of receiver coordinates, by ignoring the speed error. As speed is taken into account, the distance equation is added into the pseudorange equation. The distance equation has speed in it.