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ACCURACY ASSESSMENT OF POSITIONING USING SIGNAL BETWEEN GPS SATELLITE AND BEIDOU SATELLITE THAT EFFECT ATLAS L-BAND CORRECTION

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AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Differential Global Positioning System of DGPS is widely used in hydrographic surveying. It uses the correction from the various ground base station around the globe as it references to improve accuracy. There are many correction service provider nowadays. For this study, the correction comes from the ATLAS Basic by using L band satellite for correction data transmitter. This study is to do the accuracy assessment between GPS and BeiDou satellite constellation by using ATLAS L-band correction. 6 hours DGPS observation commenced for both GPS, BeiDou satellite. Static observation executed lastly to get the real position of the established control point. The static data post-process by using Topcon tool software tied with a JUPEM 3 based station and get the final coordinate for later comparison. The data collection phase ended and moved to the processing phase. Observation data from GPS and BeiDou firstly need to be filtered to eliminate unwanted data and left the important data only. Data after filtered will compared to the final coordinate from static observation to calculate error from both satellite constellation, then the processing phase ended, continue with the analysis phase. The analysis for this study using two Software IBM SPSS and Microsoft Excel. IBM SPSS used to do the statistical analysis while the Microsoft Excel used to plot the error pattern. For this study, GPS perform well with the error occur in the range of 0.022m to 0.8m compared to BeiDou 0.074m to 1.698m. Even though BeiDou accuracy lesser than GPS, both of satellite constellation archived special order accuracy classification guided by IHO guidelines, $<\pm 2.00$m in error or uncertainty.

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