RELIABILITY OF GNSS PERFORMANCE USING COMMERCIAL LOCALIZATION TECHNIQUE

NAME

WAN MUHAMMAD HASYIMI BIN WAN ARIFFIN

STUDENT ID NO.

2022475066

SCHOOL OF GEOMATICS SCIENCE AND NATURAL RESOURCES

COLLEGE OF BUILT ENVIRONMENT

UNIVERSITI TEKNOLOGI MARA MALAYSIA

JULY 2024

THESIS TITLE

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WAN MUHAMMAD HASYIMI BIN WAN ARIFFIN

STUDENT ID NO.

2022475066

Thesis submitted to the Universiti Teknologi MARA Malaysia

in partial fulfilment for the award of the degree of the

Bachelor of Surveying Science and Geomatics (Honours)

FEBRUARY 2024

DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original, and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

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Name of Student   : WAN MUHAMMAD HASYIMI BIN WAN ARIFFIN
Student's ID No   : 2022475066
Project/Dissertation Title : Reliability of GNSS Performance Using commercial
                                     Localization Technique

Signature and Date   :

Approved by:
I certify that I have examined the student's work and found that they are in accordance with the rules and regulations of the School and University and fulfils the requirements for the award of the degree of Bachelor of Surveying Science and Geomatics (Honours).

Name of Supervisor   : MOHAMAD ASRUL BIN MUSTAFAR
Signature and Date   :

ABSTRACT

Nowadays, surveyors tend to use localization technique as it is easier to set up than conventional RTK. With the constant innovation of GNSS survey equipment, the number of manufacturers claiming their device can provide a high accuracy using single point reference point for localization increases This study evaluates the reliability of GNSS performance using commercial localization techniques, focusing on three key points: assessing the effectiveness of current methods in GNSS-based surveying and mapping, comparing the traditional use of three reference points for localization with a single point suffices, and investigating the distance between reference points influences data quality to determine optimal spacing for accuracy. By analyzing these aspects, the research aims to provide insights into improving GNSS-based surveying practices, potentially reducing costs and enhancing spatial data quality across various applications. The methodology for this research involves evaluating the reliability and effectiveness of single-point and multi-point GNSS localization techniques by conducting a series of experiments over varying distances, analyzing the horizontal and vertical displacement data at specified intervals, and comparing the performance of both methods to determine their accuracy and applicability in different surveying contexts. The study found that the optimal distance between localization points is approximately 1 km for single point localization and can extend up to 2 km when using three points and single point localization is sufficient for distances under 1 km. In conclusion, it indicates that single point localization is sufficient for distances under 1 km, whereas for distances up to 2 km, using three localization points is more effective in ensuring data accuracy and reliability.

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