

UNIVERSITI TEKNOLOGI MARA

**RELIABILITY STUDY OF TERRESTRIAL LASER
SCANNER MEASUREMENT FOR BUILDING
MAPPING**

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this 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

The new evolution of technologies in surveying has focused on developing instruments with the capabilities to provide better accuracy and rapid data acquisition, especially for three-dimensional (3D) measurement purpose. However, due to the consideration that all acquire data are augmented with errors, thus, data quality assurance is compulsory for any proposed application or method regarding the survey jargon. In this study, the concern will be on the reliability of terrestrial laser scanning (TLS) for data acquisition in 3D building mapping. The procedure will be started by establishing a calibration field at the site, where several control points will be established and positioned using total station measurement. Those calibration points will be measured using TLS and analysed to ensure that the calibrated TLS is met the accuracy requirement for building mapping. Next, an appropriate pre-processing network based on the concept of the well-distributed target will be implemented to ensure that the quality of scanned data fulfils the level of detail 4 (LoD-4) measurement. All the data then will be processed in Cyclone Software for the registration and georeferencing procedures. For evaluation purpose, the outputs (from TLS) will be compared with the accurate controlled data which were positioned using total station measurement. The analysis will depict the data quality assurance for 3D point cloud data by the terrestrial laser scanner measurement. In conclusion, this study will present the reliability and optimise procedure for terrestrial laser scanning in 3D building mapping.

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