

## **ABSTRACT**

Nowadays, Global Positioning System (GPS) is the most important technological innovation in the field of deformation studies because there are more large and tall buildings than in the past. These buildings are being designed to be much more flexible and to resist extensive damage from changes in temperature, severe wind gusts and earthquakes. Structural engineers require the best, precise and reliable instrument to resolve their concern about building movement. Thus, various types of Real Time Kinematic GPS (RTK GPS) surveying methods such as Single-Based and Network-Based RTK GPS need to be assessed in order to determine the precision and capability of detecting small and large movements of buildings. This research aims to check the accuracy and capability of Single-Based RTK GPS surveying methods to detect small and large movements by using building monitoring simulation. Several GPS points have been established around Universiti Teknologi PETRONAS (UTP) in order to assess the precision, capability and communication of Single-Based RTK GPS. The results collected determined the 100% communication signal between base and rover receivers within 2 kilometers. Besides that, RTK GPS surveying methods also produced very high precision and are capable of detecting small and large movements up to centimeter level accuracy.