

## ABSTRACT

*Internet of Things (IOT) offers a new dimension in the world of technology and information where connectivity is available anywhere, anytime, and for any purpose. IEEE 802.11 Wireless Local Area Network group that operates on a frequency band 2.4 GHz and 5 GHz is a standard that developed to answer the needs of wireless communication technology (Wi-Fi). Recently, IEEE 802.11 working group released the 802.11ah technology or Wi-Fi HaLow as a Wi-fi standard. This standard works on the 1 GHz frequency band with a broader coverage area, the cost is more effective as well as the energy efficiency issues. The 802.11ah provides short MAC header mechanism, restricted access window (RAW), traffic indication map (TIM) segmentation, and target wake time (TWT) which support the amount and energy efficiency that used by station (STA).*

*In this final project, the influence of Random Walk, Gauss-Markov, and Random Waypoint mobility model on 802.11ah with different traffic pattern scheme, especially in RAW (Restricted Access Window) are analyzed. Design of the simulation system is done with two scenarios, which are the changing of node density and changing of RAW slot duration. Furthermore, the network performances are measured using the result of simulation from Network Simulator 3. The measured outputs of the simulation are throughput, end to end delay, PDR, and energy consumption.*

*It can be concluded that the overall performance of the network with all of the parameter scenarios is decreasing along with increasing the Stations and RAW slot. In the node density scenario, the random waypoint mobility model has the best performance with an average delay is about 0.6580557817 s, throughput is about 0.53811575 Mbps, PDR is about 96.75%, and energy consumption is about 5.2530 Joules. As for the RAW slot duration changing scenario, 0.001s slot duration resulting better performance than the other durations, and Random Waypoint mobility model has the best performance with an average delay in the both of schemes is about 0.261309512 s, 0.6385546 Mbps for throughput, 95% for PDR, and 5.068931075 Joules for energy consumption*

**Keywords:** *IEEE 802.11ah, Restricted Access Window (RAW), Traffic pattern, Random Waypoint, Randomwalk, Gauss-Markov Network Simulator 3*