

## **ABSTRACT**

*Wireless network always evolves to fulfill various needs of the society nowadays, one of its evolution is a new standard released by IEEE named IEEE 802.11ah which is an improvement from IEEE 802.11 which designed to be used in Wireless Sensor Network and Machine to Machine Communication with various limitation namely range, number of nodes, and energy consumption. A network's performance could be affected by its own environment, such as the topology form, hence a certain routing protocol is needed in order to maximize the network's performance.*

*This final assignment examine the effects of using an ad-hoc routing protocol, namely Ad-hoc On-demand Distance Vector (AODV) and Optimized Link State Routing (OLSR) in IEEE 802.11ah with two scenarios, which is the increasing number of stations, and the variation usage of RAW group and RAW slot duration, the parameter measured as follows: Throughput, packet delivery ratio, end-to-end delay, and energy consumption.*

*Simulation results shows that OLSR has better performane in throughput and PDR, the station increasing scenario shows that OLSR has better throughput with 53.4% percentage higher than AODV with the value of 34584.255 Bps, and higher PDR with 0.56% percentage compared to AODV, in the variation usage of RAW group and duration of RAW slot, the usage of longer or shorter slot duration and the usage of large or small number of RAW group resulting in bad performance. AODV excels OLSR in energy consumption parameter with 0.067% lesser consumption in station increasing scenario.*

**Keyword:** *IEEE 802.11ah, AODV, OLSR, packet delivery ratio, end to end delay, throughput, energy consumption, Network Simulator 3*