

## ABSTRACT

*Limited area coverage, power consumption and the error rate is quite high, as well as bandwidth limitations, the capacity of the link, and often there are changes in the topology of the wireless itself for mobile causes some of the performance of a system is not functioning optimally. Characteristics topology rapidly changing and unpredictable because the nodes have movement makes routing protocol has a very important role. In general, the ad hoc routing protocols are divided into three types: proactive, reactive and hybrid. IEEE 802.11ah standard was created to address these shortcomings because it supports wide area coverage by requiring less power.*

*In this final project, simulation using Network Simulator network 3 with the parameters tested are throughput, delay, packet delivery ratio, and energy consumption on IEEE 802.11ah standard using Routing Protocol Ad hoc on Demand Distance Vector (AODV) and Destination Sequenced Distance Vector (DSDV). Simulations carried out through two scenarios were analyzed separately by a change of circumstances. Scenario one represents a network conditions change the number of Restricted Area Window (RAW) are accompanied by changes in the number of nodes as well as the duration of RAW. The second scenario represents a network conditions change Modulation Coding Scheme (MCS) with regard MCS index which has been determined based on the bandwidth of 1 MHz and 2 MHz which is accompanied by changes in the data rate of each MCS index and bandwidth.*

*It can be concluded that the overall performance of the network using AODV routing protocol is much better than the routing protocol DSDV applied to the IEEE standard 802.11ah. In the changing scenario the number of RAW accompanied by changes in the nodes and the duration of RAW, the routing protocol AODV gain average value throughput is about 12800.76 Byte/s, average value delay is about 0.091036 seconds, average value packet delivery ratio is about 8.49%, and average value energy consumption is about 13.80859 J. As for the changing scenario MCS index is accompanied by changes in bandwidth and data rate, routing protocol AODV gain average value throughput is about 13982.81 Byte/s, average value delay is about 0.018432 seconds, average value packet delivery ratio is about 17.48%, and average value energy consumption is about 13.90144 J.*

**Keywords :** *Ad hoc, Performance, Energy Consumption, AODV, DSDV, IEEE 802.11ah, Network Simulator 3, RAW, MCS*