

ABSTRACT

IEEE 802.11 standard is a WLAN (Wireless LAN) standard that has been used in all over the world. IEEE 802.11ah is the newer technology that designed to supports Internet of Things (IoT) and Machine-to-machine Communication (M2M). IEEE 802.11ah has a feature called Restricted Access Window (RAW) that capable to reduce power usage and have satisfying Quality of Service (QoS).

In this research, Enhanced Distributed Channel Access (EDCA) is also applied. Same as RAW, EDCA also be able to affect QoS by modified the MAC Layer in 802.11 standard. This research uses 3 different scenarios for RAW parameters: Modifying the number of RAW Group and number of RAW Station, Modifying the number of RAW Slot and number of RAW Station, and Comparing 2 Datamodes and number of RAW Station. The EDCA Parameters that used in this research are: Contention Window (CW) and Arbitrary inter-frame Spacing Number (AIFSN). The values that expected to be the output in this research are: Delay, Throughput, Packet Delivery Ratio, Availability, and Reliability.

After the research has been simulated, the results are: First, the lowest of average delay is $N_{group} = 1$ with 2,04803 s, the highest of PDR is $N_{group} = N_{sta}/2$ with 95%, and the highest of Throughput is $N_{group} = N_{sta}/2$ with 0,13148 Mbit/s. Second, the lowest of average delay is RAW Slot = 6 with 1,39397 s, the highest of PDR is RAW Slot = 3 and 4 with 94%, and the highest of Throughput is RAW Slot = 4 with 0,13597 Mbit/s. Third, the lowest of average delay is Datamode 3,9 Mbps BW 2 MHz with 1,62927 s, the highest of PDR is Datamode 3,9 Mbps BW 2 MHz with 96%, and the highest of Throughput is Datamode 3,9 Mbps BW 2 MHz with 0,14432 Mbit/s. Reliability, Availability, and Energy Consumption also can be affected by modifying RAW parameters, in 802.11ah Energy Consumption can be reduced by increasing the number of RAW Stations and RAW Groups.

Keywords : 802.11ah, 802.11, EDCA, RAW, WLAN.