ABSTRACT

Millimeter wave (mmWave) is a technology which will have a main role in the fifth generartion technology (5G) because of the enormous bandwidth which can handle a multi-gigabit services. Millimeter wave is expected to have a huge output that 5G network need. Millimter wave has several layer, on among them is physical layer (PHY) and medium access control (MAC). On this research, the writer focused on MAC layer, mainly in the scheduler part. Scheduler has the role to scheduled the packet and allocating a resource of a subframe on the downlink slot and uplink slot. There are several scheduler and several amongst them is earliest deadline first (EDF) and maximum rate (MR) which on this research, the writer will analyze and compare the QoS of each scheduler with a simulation on Network Simulator 3 (NS-3). From the results obtained, on node density scenario with voice traffic, EDF had 42% lower delay than MR with 200m distance and 4.9% on 50m, and with video traffic, MR had 49% 1.2% lower delay than EDF on 200m and 50m respectively. For throughput, with voice traffic EDF had 28% and 25% greater value than MR on 200m and 50m respectively, and had 25% greater value with video traffic on both distances. For fairness index, EDF had a greater value both with voice and video traffic by 56% and 53%. And for the node velocity scenario, with voice traffic, EDF had a 78% and 3.7% lower delay than MR on 200m and 50m respectively, and with video traffic, MR had a 24% and 3% lower delay than EDF on 200m and 50m respectively. For throughput, EDF had a higher value both for voice and video traffic with 31% respectively. And for fairness index, EDF also had a greater value both with voice and video traffic with 60% and 63% on 200m and 50m respectively for voice and 62% and 45% on 200m and 50m respectively for video.

Keywords: mmWave, 5G, NS-3, scheduler, EDF, MR, QoS