

## ABSTRACT

*Millimeter wave is a wave that works in the frequency region of 24 - 300 Ghz so that in the frequency range it is expected that the 5G millimeter wave network can provide services that have very good quality, very low latency value, and have a large bandwidth capacity so that they are expected to overcome problems that occur due to increased use of services, high mobility needs, and communication needs in real time. However, for the implementation of 5G networks that use millimeter wave technology there are still problems such as millimeter wave waves that are susceptible to obstacle interference and limited millimeter wave cell range, so to overcome this problem, integration between 4G Long Term Evolution (LTE) and network 5G that uses millimeter wave technology.*

*In this study, the performance analysis of voice and video codec services with a handover scheme between the 4G Long Term Evolution (LTE) network and 5G millimeter wave network will be simulated using Network Simulator 3 software and tested with two test scenarios in the form of adding a number of users and increasing speed the user. Then the analysis of the simulation results is done through Troughput, Delay, Jitter and Handover Delay.*

*Based on the simulation results obtained for voice services, Codec G.723.1 gets the lowest throughput value of 0.1654 Mbps so that the G.723.1 codec is the best voice codec for bandwidth efficiency. The best voice service quality is obtained by the G.711 codec, because it gets the lowest value of delay, jitter, and handover delay compared to the G.729 and G.723.1 codecs. In video services, the highest throughput value is obtained by H.264 codec with a value of 5.9729 Mbps, for the value of delay, jitter, and handover delay, the H.265 codec gets the lowest value of 0.8580 ms for delay, 0.0535 ms for jitter, 0.4383 ms for handover delay.*

**Keywords :** *Millimeter Wave, 5G and LTE, Handover, Voice and Video Codec Services, Quality Of Service.*