

ABSTRACT

The increase in the number of cellular users around the world has resulted in congestion of cellular communication traffic on the Base Station (BS). Device to Device (D2D) Communication becomes a new paradigm to solve the problem. D2D is featured in 5G networks that allow devices to communicate directly with each other without going through the BS. In Recommendation ITU-R M.2083 provides specific guidance for D2D implementation in 5G networks. However, the implementation of D2D communication caused interference to the nearby Cellular User Equipment. Interference caused due to D2D uses the same resources as CUE.

This final project, analyzes the interference that occurs by performing interference management processes in a downlink scheme using the greedy algorithm as a resource allocation and then continues by allocating power with the adaptive power control algorithm. The comparison parameters in this simulation are the sumrate value, power efficiency, spectral efficiency, and fairness.

The simulation results in this final project research show that the use adaptive power control algorithm on D2D communication can reduce the influence of interference that occurs in cellular communications. The adaptive power control algorithm increases performance values at sumrate of 49.91%, power efficiency of 182.03%, spectral efficiency of 43.73%, fairness CUE of 66.11%. However, the D2D fairness and total fairness have relatively poor values with a decrease in D2D fairness performance of 13.52% and total fairness performance of 4.36%.

Key Word : Device to Device (D2D), Adaptive Power Control, Underlying