ABSTRACT

Abstract - Indoor Building Coverage (IBC) is one of solution that can be applied to solve blankspot problem inside the building. Blankspot problem appears caused by when the radiowave propagated through multipath environment and experienced various loss like building constituent material of its building. In the MRT Tunnel blankspot tunnel can be solved by using Distributed Antenna System (DAS) by distribute a number of antenna inside the tunnel. The simulation can be done using Radiowave Propagation Simulator (RPS) to simulate the coverage inside the tunnel and Network Simulator 3 (NS3) to simulate and analyze the user mobility effect toward network performance. From the result of link budget calculation based on coverage obtained a total of 6 bi-directional antennas to cover the entire tunnel area with EIRP 25.755 dBm. Coverage overlapping will made with value 10% to maintain UE connectivity with the network, so that the UE between antenna will be separated as far as 1228 meters. From the coverage planning simulation using Radiowave Propagation Simulator (RPS) obtained average value of RSRP in the designed area with RSRP value -78.36dBm with PDF value 1.5% user in thus area obtained RSRP value -78.36 dBm with CDF value 54%. The average SIR value obtained in the designed area with SIR value 8.51 dB with PDF value 2.2% of users obtain the SIR value 8.51 dB with CDF value 51%. On user mobility simulation the UE velocity will be varied i.e. 10km/h, 40km/h, and 80km/h. From the simulation, the first scenario with UE velocity 10 km/h obtained the average RSRP value is -129,97 dBm, average RSRQ value is -14,77 dB, and average SINR value is 23,27 dB. The second scenario with UE velocity 40 km/h obtained the average RSRP value is -130,02 dBm, average RSRQ value is -14,82 dB, and average SINR value is 23,22 dB. The third scenario with UE velocity 80 km/h obtained the average RSRP value is -130,16 dBm, average RSRQ value is -14,08 dB, dan average SINR value is 23,08 dB.

Keywords: *Distributed Antenna System, Indoor building coverage, User Mobility*,LTE.