

## ***ABSTRACT***

The development of cellular technology in Indonesia has entered the era of 5G NR, which was born in IMT 2020. IMT 2020 is a set of standards for the specifications of 5G wireless networks. There are three frequencies for 5G networks, namely High band, Mid band, and Low band, which provide flexibility based on coverage and user capacity. 5G networks require greater resources to send and receive data at higher speeds. The application of carrier aggregation can reduce the overall power consumption rate, increase throughput, and maintain high service levels. In addition, it can reduce the need to use new sites so as to save costs for operators. This network planning uses frequencies of 700 MHz and 3500 MHz. The propagation model used is Urban Macro with an Outdoor-to-Outdoor line-of-sight downlink scenario. Based on the results of the analysis of Scenario 3, the average value of the SS-RSRP parameter was -81,34 dBm, the average value of the SS-SINR parameter was 16,67 dBm, and the average value for the data rate parameter was 724,799 Mbps. Based on the results of the analysis of Scenarios 1, 2, and 3, results were obtained where in Scenario 1, the SS-RSRP parameter increased by 0,97%, the SS-SINR parameter increased by 5,1%, and the data rate parameter experienced a significant increase, reaching 206,359%. Scenario 2, the SS-RSRP parameter increased by 3,36%, the SS-SINR parameter increased by 40,9%, and the data rate parameter increased significantly to 75,25%. This proves that using the inter-band carrier aggregation method can increase SS-RSRP, SS-SINR, and Data Rate. Thus, allowing network providers to use more than one carrier simultaneously to increase service capacity in the Bekasi city industrial area.

*Keywords: Carrier, Coverage, New Site, Urban Macro, 5G NR*