ABSTRACT

The implementation of 5G cellular technology in Indonesia has not been implemented, especially in the Tanjung Karang area, causing operators to experience difficulties in implementing 5G technology in Indonesia. Because of this, it is necessary to analyze several aspects, one of which is knowing the service coverage by analyzing the path loss value. This study analyzes the path loss value calculation in finding the value of 5G cellular technology service coverage in Tanjung Karang. The background is the characteristic condition of urban micro outdoor cells to determine the path loss value in Tanjung Karang.

In calculating the path loss value in the Tanjung Karang area using data from BMKG Lampung, data taken from January 2017 to December 2021 include humidity, air pressure, temperature and rainfall. In calculating the path loss value, several calculation methods are used, namely the calculation method to determine the path loss value using the NYUSIM, ABG and CI simulator calculation methods, with a working frequency of 28 GHz and a bandwidth of 100 MHz for a service coverage of 200 m.

The path loss values obtained from the three path loss calculation models, the ABG and CI calculation models get path loss values of 140.4 dB and 120.8 dB and for the NYUSIM simulation the average path loss value is 154,05 dB. The path loss value in the NYUSIM simulation is closer to the path loss value in the link budget calculation with the path loss value obtained in the uplink condition of 159.99 dB and downlink 160,49 dB. The results of the link budget calculation get a value of -114.99 dBm and -115.49 dBm for uplink and downlink conditions with a receiver sensitivity value of -154.93 dBm and a reception sensitivity value of -109.45 dBm.

Keywords**:** 5G, *path loss*, *micro cell*, LOS, NLOS, NYUSIM, *link budget*