

Abstract

5G cellular communication technology is developing rapidly in various countries in the world, including Indonesia. The variety of regional characteristics in Indonesia certainly affects 5G communication in Indonesia. The development of cellular technology starts from urban areas. To carry out equitable distribution of 5G networks, of course, it is necessary to build infrastructure. In the development process, there are several parameters that must be considered such as: gNodeB height, signal coverage distance, transmit power and others. These parameters will later affect several aspects such as the magnitude of the pathloss value. This study analyzed a comparison of three Pathloss 5G modeling for urban Macro cells, namely Urban Macro (UMa), Alpha Beta Gamma (ABG), and Close-in (CI) at a frequency of 1.8 GHz (mid-band) with high parameters of gNodeB and distance. The 1.8 GHz frequency was chosen because it has begun to be used in Indonesia by several operators. . Pathloss modeling using matlab R2020a software simulation. The results of this study obtained a comparison of the three Pathloss models (Urban Macro, Alpha Beta Gamma, and Close-in). Distance greatly affects the pathloss value in all three models (UMa, ABG, and CI), the farther the distance, the greater the pathloss value will be in both LOS and NLOS conditions. It was obtained that in los conditions UMA modeling has the smallest PL value with a value of 89.79 dB while for the largest PL value is in CI modeling with a value of 93.68 dB. However, in NLOS conditions, the PL value in CI modeling is the smallest with a value of 117.12 dB while the PL value in UMA modeling is the largest, namely 119.05 dB.

Keywords : 5G, Pathloss, Urban Macro, Alpha Beta Gamma, Close – In.