

ABSTRACT

Telecommunication Technology of 5G new radio (NR) can be realized in 2020. 5G channel model can be designed in accordance with parameters in Indonesia territory. This research considers the potential use of 28 GHz frequency including the 5G frequency which is able to meet the needs of wide bandwidth and data transmission up to 1 Gbps. High frequency is vulnerable of nature condition. This research produced channel model by adjusting the characteristics of Indonesia 5G channel in Purwokerto city. The parameter of Purwokerto city is represented to power delay profile (PDP) values using computer-based simulation using statistical spatial channel model (SSCM) techniques implemented in the NYUSIM channel simulator. The PDP values calculated to obtain the outage probability which indicates a receiver failure based on Shannon capacity theory which is channel capacity (C) value lower than coding rate (R). Cumulative distribution function (CDF) of channel capacity (C) calculated using samples to evaluate C and R values outage probability. Results in this research is compared in the channel capacity usage with the same Eb/No condition in 0 dB-29 dB with the variations of coding rate (R) $\frac{1}{2}$, $\frac{3}{4}$ and 1. According to simulation coding rate $\frac{1}{2}$ is more efficient in channel capacity and power usage is 4,9 b/s/hz and 9,9 dB to get outage probability of 10^{-4} . The results of this research was not get fluctuation on curve of outage probability 10^{-4} , so it can be used as a reference 5G channel in Indonesia territory,, especially Purwokerto city.

Keywords : 5G new radio (NR), Channel model, power delay profile, capacity, outage probability.

