

ABSTRACT

Telecommunications technology continues to grow rapidly every year because the need for communication that is used by the community as a service to support life's needs in terms of the use of information exchange is increasing. The process of transmitting information through a channel will not be separated from obstacles in the form of errors. Modulation is the process of laying on information from the modulation signal to the carrier (the high frequency) by varying the carrier signal according to the modulation signal. One parameter that determines the quality of digital modulation is the Bit Error Rate (BER) by looking at the effect of the energy value per bit of the power spectral density ratio (E_b / N_0) and signal to noise ratio (SNR). The purpose of the study can be the basis of reference between modulation comparisons in the implementation of 5G technology and can be developed in future studies, so that the benefits generated can maximize the implementation of 5G technology. Data collection in this study uses two scenarios, namely Additive White Gaussian Noise and Frequency-flat Rayleigh Fading channels. In each scenario using modulation that is different from the modulation of BPSK, QPSK and 16-QAM. After the simulation results using Matlab are obtained, these results will be compared with the BER theory, each modulation is then compared between the modulation. The simulation results obtained from the two channels that are used are the best BPSK and QPSK modulation because the AWGN channel only requires E_b / N_0 8,5 dB to get BER as big as 10^{-4} , whereas for frequency-flat rayleigh fading channels only requires E_b / N_0 of 34 dB to get BER as big as 10^{-4} .

Keywords – 5G modulation, 5G additive white gaussian noise, 5G frequency-flat rayleigh fading, E_b/N_0 .