ABSTRACT

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The 5G network transmits a broadband connection that can run at multigigabit speeds with potential speeds of up to 20 gigabits per second (Gbps). 5G systems are capable of operating on several bandwidths ranging from the spectrum below 1 GHz to 100 GHz. High frequency can reduce errors and as an error detection channel coding. One of the coding channels used in this research is convolutional codes. So this study analyzes the performance of convolution codes on a 5G system using a frequency of 26 GHz and a bandwidth of 200 MHz. In Channel coding convolutional codes using a coding rate R = 1/2 and without channel coding (uncoded) using a coding rate of R = 1. This study evaluates the performance of BER (Bit Error Rate) convolutional codes and uncoded using BPSK (Binary Phase Shift Keying) modulation with cyclic prefix-Orthogonal Frequency Division Multiplexing (CP-OFDM). The results of the channel modeling are presented with a representative PDP, obtaining a path of 26, then getting a modified PDP value of 9 paths. BER performance Convolutional codes with an SNR value of 35 dB at an average BER of 10^{-5} performance results uncoded with an SNR value of 40 dB at an average BER of 10^{-5}. From these performance results, it shows that the gap between convolutional performance and uncoded has an SNR range of 5 dB. This condition shows that convolutional has better performance than uncoded. So convolutional codes as channel coding are proven to be able to reduce the BER value.

Keywords : 5G, Convolutional codes, BER, PDP, BPSK