

ABSTRACT

Fifth generation Telecommunications Technology (5G) where this technology will be launched in 2020. Current technological developments have led to an increase in user demand for high data transfer speeds and it can be estimated that speeds can reach 20 Gbps. This study evaluates a 5G system with an operating frequency of 2.3 GHz and a bandwidth of 50 MHz based on the specification of orthogonal frequency division multiplexing (OFDM) numerology 0 which is expected to be useful and able to meet the needs of stable and equitable services for every user of 5G NR technology. This study models a 5G system broadband channel with and without the influence of human blockage represented by the Power Delay Profile (PDP) obtained by simulation. This study also evaluates the Bit Error Rate (BER) performance. Uncoded using Quadrature Phase Shift Keying (QPSK) modulation and Binary phase shift keying (BPSK) modulation with the results obtained from channel modeling presented with a representative PDP with the influence of human blockage with an FFTsize of 128, a PDP of 17 paths with a delay value of multiples of 10ns. For the performance results of the QPSK BER with an SNR value of 45.1 dB at an average BER of 10⁻⁵. The results show that channel conditions with human blockage influence the communication system on 5G compared to non-human blockage, because it has a gap of 0.4 dB. Whereas for the BPSK BER theory with the influence of human blockage and non-human blockage shows a gap of 0.2 db.

Keywords: 5G, BER, PDP, SNR, QPSK, BPSK