

ABSTRACT

With the increasing demand for transmissions data, make digital communication system take a part to evolve. One of the technology that is currently in demand is the technology Long Term Evolution (LTE). LTE is the latest technology in wireless communication and will continue to evolve. LTE is often used because it has a peak data rate and has spectral efficiency. To fulfill the benefits, LTE use Orthogonal Frequency Division Multiplexing (OFDM) as a Multiplexing technique. Learning about digital communication system use Orthogonal Frequency Devision Multiplexing (OFDM) at Telkom University, especially in diploma three of Telecommunication Technology has not used visualization. So students to understand OFDM are lacked.

Therefore, in this final project is focused on designing a simulator as a media to learn digital communication system Orthogonal Frequency Devision Multiplexing (OFDM) use Matrix Laboratory (MATLAB). Where, the design system consists of data generators, channel coding, Mapper, converter S/p and P/s, the use of Inverse Fast Fourier Transform (IFFT) and Fast Fourier Transform (FFT), using Rayleigh Fading Canal and Additive White Gaussian Noise (AWGN), analyzes the Bit Error Rate (BER) to test the performance results of this simulator. The simulator uses several modulation techniques on the mapper as a comparison of Binnary Phase Shift Keying (BPSK), Quadrature Phase Shift Keying (QPSK) and the last 64 – Quadrature Amplitude Modulation (64-QAM).

From this final project, a simulator which is in accordance with the theory is obtained. So, the students can easily to learn OFDM.

Keyword : Digital Communication System, OFDM, BPSK, QPSK, QAM, BER, Rayleigh, AWGN