

## ABSTRACT

*With the existence of various technologies that really help human resources, a communication system is needed that is capable of providing broadband services wirelessly and is able to support services with full or fixed mobility. Frequency spectrum bandwidth is a limited resource in a communications system. Bandwidth usage is very important to maximize system capacity and accommodate more users or communication services. OFDM is a method that uses several mutually orthogonal frequency subchannels to transmit data. Although OFDM has many advantages, such as high specific efficiency and fading tolerance, it also has several weaknesses that need to be overcome. As an alternative to improve OFDM performance and overcome some of its weaknesses, a new method such as Multi Carrier Bank Filter - Offset Quadrature Amplitude Modulation (FBMC-OQAM) has been developed. In this research, the performance will be compared between using the Cyclic Prefix-OFDM modulation scheme and the Offset QAM-FBMC modulation scheme based on parameters such as Bit Error Rate (BER) and Power Spectral Density (PSD) using 16-QAM as the modulation. The results obtained by the author when comparing the two transmission techniques were that the FBMC-OQAM transmission technique on the Rician Fading channel had the smallest BER value, namely 0.3928 dB when the SNR value was -2.5 dB. Meanwhile, the BER value of the FBMC-OQAM transmission technique on the Rayleigh Fading channel has a value of 0.3939 dB when the SNR value is -2.5 dB. And for the Power Spectral Density results, the results show that the Power Spectral Density of the signal transmitted using CP-OFDM has a greater Power Spectral Density compared to FBMC-OQAM.*

**Keywords:** CP-OFDM, FBMC-OQAM, Bit Error Rate, Power Spectral Density.