

ABSTRACT

In line with development of information technology and telecommunications which growth very fast, hence the digital wireless communications system claimed to provide high-speed data service with reliable QOS. One of the technique able to be used for that is OFDM (Orthogonal Frequency Division Multiplexing) multicarrier modulation technique.

The principle of OFDM is to split a high rate serial datastream into a number of lower rate parallel datastreams, than each of that modulatted over a number of orthogonal subcarriers. This Orthogonalitas causing the spectrum between subcarrier enable to overlapping so that the bandwidth will be more efficient.

Although the OFDM robust against multipath fading, but usage of transmitted power for every subcarriers doesn't in efficiency, especially under the frequency selective fading, where each subcarriers will be treated to differently by channel even suffer from deep-fading, so that the received power level from each subcarriers also will differ, there is big and there is small. Received power from the subcarrier with small level will be degrade the system performance, especially if seen from the BER. To handle that the problem, hence using data transmission with a variable power (weighting coefficient) for each subcarrier based on the estimated SNR from EVM Estimator.

The simulation result show that the utilization of subcarrier power variable gives more good performance than the conventional OFDM system. In the AWGN channel, 5.883 dB gain gives using from the channel estimation and channel coding, while in the multipath rayleigh fading channel with grouping coefficient equal to 4 , 12.5 Hz doppler frequency and target BER 10^{-5} gives about 3.667 dB gain. Increasingly the grouping coefficient make the performance better tend to shows, but grouping equal to 4 representing most appropriate grouping by considering trade-off between complexity with the increasing performance.

Keyword : OFDM, EVM, IEEE 802.11a ,weighting coefficient, channel prediction.