

ABSTRACT

Multiple Input Multiple Output (MIMO) technique is technique use multiple antennas at both transmitter and receiver. This technique can provide capacity of information is greater and also provide quality of information is better. To overcome the effect of frequency selective fading channel occur when the transmission data is very high, then this technique combined with OFDM (Orthogonal Frequency Division Multiplexing). The combination of both systems is often mentions as MIMO-OFDM.

On this final project, conducted research and analysis of comparative performance of STBC scheme requires channel estimation at the receiver with DSTBC scheme without requiring channel estimation at the receiver on the MIMO-OFDM system. This analysis is done by creating simulation in MATLAB. And the modeling the channel will be used in this simulation is Rayleigh fading channel with added noise Gaussian within speed of user is about 0 km/hr, 3 km/hr, 30 km/hr and 90 km/hr.

The simulation results show that the performance DSTBC MIMO OFDM scheme is better than STBC MIMO OFDM scheme. To achieve BER 10^{-3} , DSTBC 2x2 MIMO OFDM scheme in Rayleigh fading channel only requires SNR about 11 dB, while STBC MIMO OFDM scheme requires SNR about 19 dB. And for DSTBC 2x4 MIMO OFDM scheme only requires SNR about 7.5 dB, while STBC MIMO OFDM scheme requires SNR about 16 dB. For variation in speed user STBC scheme is very influential when the speed is 0 km/hr requires SNR 18 dB and when the user speed of 90 km/hr SNR reaches more than 20 dB. For DSTBC scheme, variation of speed user does not affect the performance system.

Keyword : MIMO, OFDM, STBC, DSTBC, *Rayleigh*