ABSTRACT

The wireless system is developing in the world, with its voice service, text, and high datarate multimedia. The high datarate communication system will cause high bandwidth allocation, as consequence it is susceptible concerning multipath fading effects. This result will cause decresing of performance of wireless communication system. One of techniques to realize the high datarate wireless communication system is OFDM multicarrier modulation, where is the channel effect of selective fading frequency will be felt flat fading by each subcarriers. Using a multiple antenna system which is known as MIMO(Multiple Input Output) with STBC scheme also improve system performance from multipath fading causes. To maximized the performance of antenna array at the receiver side we use the beamforming technique, where is the technique is used to catch desired signal.

This final assignment, the system is simulated using combination of MIMO, OFDM and beamforming techniques in the Rayleigh distribution channel. In order to real condition, some scatterers is add to the channel. The scatterers can make channel correlation that influential to system performance. The channel correlation modeled by GBSB circular that indicate fixed wireless condition in the open area. This research compare the performance between MIMO OFDM system with MIMO OFDM added adaptive beamforming at the receiver side.

From the simulation result, MIMO with or without *beamforming* has the same performance in single user. But for the condition of channel correlation, the system performance is decresed because bad channel condition if compare with system of the uncorrelation channel's condition.