ABSTRACT

MIMO (*Multiple-Input Multiple Output*) is a new invention in wireless communication technology. This system used multiple antennas transmit and multiple antenna receive which capable to provide better system performance and capacity in multi-path fading channel. In MIMO, the capacity improvement can not accompany by the capacity improvement. To increase the system performance, we can use spatial diversity. On the other hand, to increase the capacity, we can use spatial multiplexing.

Discussed within this final assignment, the capacity from MIMO system in two conditions, without space time coding and with Space Time Block Code (STBC). The capacity calculation used the principal of mutual information. There are several conditions that assumed for channel of the system, CSIT-R and CSIR for MIMO, CSIT-R and CSIR for MIMO STBC. We also compared the capacity over multi-path fading Rayleigh and Rician.

From the simulation results, we conclude that in the low SNR (< 2,5 dB), MIMO CSIT-R has 2 bps/Hz more than CSIR and NONCSI conditions. In this SNR, MIMO STBC has 2 bps/Hz more than MIMO. In the high SNR (5 dB), MIMO NONCSI has 2 bps/Hz more than CSIT-R and CSIR conditions, while MIMO has 8 bps/Hz more than MIMO STBC.

Keywords :   MIMO, STBC (Space Time Block Code), CSI (Channel State Information), Mutual Information, Rician, Rayleigh