ABSTRACT

The performance of a communication system was defined by the medium or the channel that its used. In the last few years the technology of radio frequency or usually called with wireless communication has increased rapidly. It's caused by some reason, one of them are the big necessary of application can be obtained by the consumer. from these things. Anyway, for the next few years the multi data rate service can be very dominant. This service needs the big sufficient capacity and, one of the technology can required this service is MIMO (Multiple Input Multiple Output).

This project will show an explanation about the capacity in MIMO system, which divided by 2 channel condition, they are LOS condition (*Line Of Sight*) which used ricean distribution and NLOS condition (*Non Line Of Sight*) which used rayleigh distribution. Each of them will generate by the simulation process which are properly with some parameters that has defined before, and then the validity of coefficient channel generation will be checked according to the curve of their *pdf (probability distribution function).*

The simulation show the MIMO channel capacity with difference user condition like motionless or make any movement with difference velocity, and the channel information on the receiver or transmitter (Channel State Information). Each measurement about channel capacity with the expected condition will appropriated with the used channel distribution, they are rayleigh fading channel and ricean fading channel.