ABSTRACT

Digital communcation receivers employing equal gain combining (EGC) .EGC receivers is a well-known promising avenue for improving mean signal strength and reducing signal level fluctuations in fading channels, where the multiple received copies can be combined intelligently to provide a higher average received signal-to-noise ratio (SNR). EGC present significant practical interest, because they provide performance comparable to optimal maximal combining ratio (MRC) technique, but with simpler implementation complexity.

In communication system, it is often assumed that the receiver is perfectly synchronized to the transmitter, and the only channel impairment is noise. In practice, it is often found that in addition to the uncertainty due to channel noise , there is also uncertainty due to the randomness of certain signal parameter. Perhaps the most common random signal parameter is carrier phase. A small phase error can causes a large degradation in performance of receiver.

In this final project is analysis effects of carrier phase error on EGC Receivers in correlated Nakagami-m fading. From the simulation result can be found phase error had important influence to the EGC receivers performance. The influence started to look dominant at above 33° . This can be seen when at phase error score above 33° produce terrible BER which is 0.5. The influence of correlation coefficient are great deal.When we make the correlation coefficient up to 0.2 it make reduce the error at $2.62\ 10^{-5}$.

From the simulation result can be seen that the greater fading figure used the BER resulted are better and can make the error down to $1.36\ 10^{-3}$. BPSK modulation are chose because it produce better BER which is $1.2\ 10^{-4}$ from the QPSK.

keyword: *carrier phase error, equal gain combining* (EGC), fading Nakagami-*m, signal-to-noise ratio* (SNR), *Bit Error Rate* (BER).