ABSTRACT

Orthogonal Frequency Division Multiplexing (OFDM) is a modulation technique that uses a large number of carriers that orthogonal to each other. The concept of OFDM is to split a high speed serial data into parallel data at a lower speed, then the parallel data carried by mutually orthogonal subcarriers. With data rate that is lower, then the OFDM system becomes more resistant to multipath fading. To improve the performance of OFDM, there are many variety of system architectures. One of many method is LCI-OFDM (Large Carrier Interferometry-OFDM). This method repair the deficiencies OFDM as a multicarrier system, particularly the problem of Peak to Average Power Ratio (PAPR) that is high. In implementation, the negative effect of this high PAPR results in battery / power mobile terminals that are not durable / wasteful .

In this final project, the performance of OFDM systems using Large Carrier Interferometry code was analyzed. Simulations performed on Rayleigh Fading channel with additional noise Additive White Gaussian noise (AWGN). Research demonstrated the system performance parameters such as the type of mapper , number of subcarriers and user speeds. In addition, the system performance comparison is also done with the comparison spreading code that is POCI code .

Simulation results in this thesis demonstrated the performance improvement system. Code LCI provides improved performance on the number of subcarriers 128, 256, 512 , and 1024 respectively amounted sequence : 4 dB , 3.4 dB , 2 dB , and 1 dB for a target BER 10^{-5} compared to systems that implement POCI code. For PAPR, LCI code gives improvement of 4.42 dB, 5 dB, 5.45 dB, 6.1 dB on subcarrier 128 , 256 , 512 and 1024 from the OFDM system without spreading code.

Key Words : OFDM, INTERFEROMETRY, LCI, PAPR, BER, AWGN, Rayleigh Fading