ABSTRACT

The development of a wireless communication system which is in line with the economic growth in urban-dense area led to the symptoms of multipath fading. In order to resolve the problem of multipath fading, MIMO-OFDM (Multiple In Multiple Out-orthogonal frequency division multiplexing) can be used. However, the OFDM signal that is consisting of several sub-carrier will generate high peak power at the center frequency.

The differences between the peak power with the other subcarrier causes the value of PAPR (Peak to Average Ratio) higher. The higher value of PAPR will cause the waveform distortion due to the characteristics of the non-linearity of the amplifier. One of method than can be used to decrease the value of a high PAPR is using Partial Transmit Sequence (PTS). This final project is using coded PTS as method for reducing value of PAPR in MIMO OFDM 8 x 8 systems.

This Final Project's aim is to reduce PAPR in 8x8 MIMO-OFDM systems with low error transmission which is achieved by using coded PTS as a block reductor, so the decreasing of performance caused by the HPA can be suppressed with coded PTS. The scenarios are variety of antennas, variety of doppler speed, variety of IFFT's points, and variety of modulation. This can be seen from the simulation results with the parameters that have been determined through the graph characteristics of BER (Bit Error Rate) and CCDF chart (Complementary Cumulative Distribution Fuction). Parameters that have been changed are modulation, channel coding, signal bandwidth, IFFT's points, channel type, and MIMO decoding method.

The simulation shows the result of MIMO-OFDM OSTBC 8x8 system along coded PTS as reductor block is better than the system along PTS as redactor block with Doppler speed 40 km/hr, size of IFFT whereas 1024, and 16 QAM as modulation type. This system reaches 10^{-6} of BER on 6 dB of Eb/No

Keywords: *MIMO-OFDM, High Power Amplifier (HPA), Peak-to-Average Power Ratio (PAPR), Partial Transmit Sequence (PTS), coded PTS*