ABSTRACT

In wireless transmission systems, Single Carrier-Frequency Division Multiplexing Access (SC-FDMA) has a problem of high value of Peak-to-Average Power Ratio (PAPR). SC-FDMA has complexity and performance that is almost equal to OFDMA but has a lower PAPR value performance than OFDMA, because SC-FDMA has an inherent single carrier structure. The PAPR value that occurs in SC-FDMA appears dependent on the subcarrier mapping that is used, localized-FDMA and distributed-FDMA is a type of subcarrier mapping in SC-FDMA that generates a high PAPR value. Despite the lower PAPR value compared to OFDMA, the PAPR value reduction performance on the SC-FDMA can still be improved, one of them using the Partial Transmit Sequence (PTS) method.

This final task aims to simulate and analyze the Adjacent Partitioning-PTS method for the PAPR value reduction on the SC-FDMA uplink LTE system. The Adjacent Partitioning-PTS method is a PTS method by partitioning the modulation symbol and placed into the same size sub-block sequentially. The success parameter of the AP-PTS performance on this final task is reviewed from the simulation test output of the PAPR chart until the probability CCDF 10^{-3} BER value. While the tested and simulated parameters are the cyclic prefix effect, the roll of factor effect, the digital modulation effect, the number of IFFT subcarrier effect, the number of AP-PTS partitions effect, and the SNR effect on BER of SC-FDMA and OFDMA.

The result of simulation and analysis on this final task is the AP-PTS method can reduce the value of the PAPR (dB) SC-FDMA system in general at 3.377 dB at the probability value of CCDF 10^{-3}, cyclic prefix 25%, roll of factor 0,25, 16 QAM, 512 IFFT subcarrier, and 50 AP-PTS partitions. If seen from the test results and the BER value analysis the AP-PTS method isn't getting the BER transmission standard of 1×10^{-3} yet. So, the AP-PTS method isn't yet suitable to be used as a practical system for a telecommunication network.

Keyword: SC-FDMA, PAPR, AP-PTS