

ABSTRACT

In the current era, specifically in the telecommunications world it can be said the number of cellular users from year to year always increases. This has led to new innovations in the world of telecommunications to increase user capacity and improve service and quality in order to maintain cellular user satisfaction. One form of innovation in the telecommunications world is the development of Orthogonal Frequency Division Multiple Access (OFDMA) technology called Generalized FDMA (G-FDMA). Previously there were several technologies (OFDMA) namely Signal Carrier FDMA (SC-FDMA) technology, Interlaved Frequency Division Multiple Access (IFDMA) and Localized Frequency Division Multiple Access (LFDMA). In the G-FDMA scheme, allocations can vary on bandwidth.

The technique in this final project research is to simulate and evaluate the G-FDMA system by using a combination of clipping and pulse shaping techniques using the Root Raised Cosine (RRC) filter by observing the number of subcarriers and roll of factors used. The main principle of the clipping technique is to cut the signal before the signal enters the amplifier by limiting the amplitude of the clipping input signals to a predetermined threshold. While the pulse shaping filter is a convolution process with a filter coefficient in accordance with the roll of factor filter used.

Evaluation of GFDMA performance from the comparison of PAPR and IFDMA performance results has poor results, namely 2,3083 dB when the number of subcarriers is 256, roll of factor 0 and number of symbols is 64, but has good PAPR performance results when compared to LFDMA, namely with a PAPR value of 2,357 dB when the number of subcarriers is 256, roll of factor 1 and number of symbols is 64. Meanwhile, the evaluation of BER performance has quite good results when compared to IFDMA which is 2 dB when the number of subcarriers is 512, roll of factor 0 and number of symbols is 64 and when compared to LFDMA gets a value of 6.2 dB when the number of subcarriers is 512, roll of factor is 0 and the number of symbols is 64.

Keywords: OFDMA, G-FDMA, SC-FDMA, IFDMA, and LFDMA.