ABSTRACT

On digital satellite communication systems have many advantages one of which is a fairly broad range and have better quality compared to analog. But in the process of power limitation in a transponder satellite system works on the point of saturation to ensure maximum radiated power. At saturation, the transponder did not work on linear working point conversion raises AM - AM and PM - AM, where nonlinear effects can cause signal distortion and can significantly affect system performance.

Selection of an appropriate transmission technique, is one way to minimize the problems that exist in the satellite transponder. OFDM is a transmission technique that uses several frequencies (multicarrier) are mutually perpendicular (orthogonal). Where in OFDM, the overlap between adjacent frequencies in the allowed, because each have mutually orthogonal. However, the applicability of other problems arise such as the high value of PAPR as a result of the limited work area PA, the effect of delay on orthogonalitas, and transponder capacity is limited. In this final will be on the application of OFDM performance analysis in the satellite transponder link at Ku-Band.

From the simulation results obtained showed use of Clipping techniques with the clipper level of 5 dB can be reducing the PAPR for the number of subcarriers 512, 1024 and 2048 respectively amounting to 1.0852 dB, 2.1879 dB, and 2.9179 with a large SNR gain of about 15.14 dB which is close to the SNR without any PAPR reduction technique that is equal to 15.14 dB for a BER target of 10^{-4}. As for the use of subcarrier 1024 on the condition of the satellite channel affected by rainfall requires a larger SNR for the target BER of 10^{-4} is equal to 15.21 dB as compared to clearsky condition that requires only 11.5 dB SNR.

Keywords: OFDM, PAPR, orthogonality, Ku-Band, satellite links, transponders