ABSTRACT

The development of information technology stimulates the increasing of using data communication. Because of that, C-band frequency that is used today, can't be accommodate the increasing the necessity of information user. One of solution is using the Ka-band frequency. Ka-band frequency is used on LEO satellite communication system. LEO is the satellite with lowest orbit, so transmissions delay will be lower than other transmissions. One kind of LEO satellite is teledesic satellite. To cover the whole of the world, 288 teledesic satellites are needed.

MC-DS-CDMA is the combination of efficient modulation technique; there are OFDM and multiple access CDMA. Multi carrier system is offering superiority of efficiency in using frequency spectrum because allowing overlapping of orthogonal sub carrier. The using of sub carrier in MC-DS-CDMA system won't enlarge the bandwidth necessity because that is used in serial-to-parallel system, so the bandwidth necessity will be equal with using single carrier. Using multi carrier in every orthogonal sub carrier cans also increasing the system performance. The result is the system with good and efficient performance in bandwidth using.

System performance analyzing process is seen from 2 parameters such as SNR (Signal to Noise Ratio) and BER (Bit Error Rate). From the simulation result, we can make a conclusion that is with bigger K factor, the system performance will be getting better. The optimum point of K factor is 25. At K factor 25 and using a BPSK modulation with BER target 10^{-6} the SNR point reach ± 11 dB. With QPSK modulation, at K factor 25 the SNR point reach ± 16 dB. BPSK modulation is the optimum modulation for satellite communication with multiple access MC-DS-CDMA. System performance will getting better simultaneously with the increasing number of sub carrier. In Rician canal, the optimum number of carrier is 128 and on AWGN canal, the optimum number of carrier is 256. The using of step size on equalizer will reach optimum value at (μ) = 0.0001.