

ABSTRACT

Nowdays, the development in telecommunication grows rapidly, including satellite communication system playing in there. Excalation in service and user of satellite will give attention in using available capacity. Therefore, the multiple access and modulation that have function to send the signal need focus in using them. Especially in satellite communication system, using of optimum multiple access and modulation in system give efficiency in using capacity of transponder.

Power and bandwidth are priority parameters to get capacity of transponder in satellite communication system. The limit of power in air space is one of the factor that power have appropriate with value of bandwidth. The kind of modulation that comparing in final project are BPSK, QPSK, 8PSK, and 16 QAM. The calculation of value power and bandwidth in each modulation will give the most optimum modulation. In TDMA, verification the most optimum modulation is from the number of carrier in bandwidth close to the number of carrier in power. The most optimum modulation in CDMA is looking from the biggest processing gain in each modulation.

Based on analysis result, can be known that TDMA system get the most modulation is QPSK with FEC $1/3$. This system has the number of carrier in bandwidth and power are 12, and get the capacity of information bit rate is about 24.537,6 Kbps. In CDMA system, the most optimum modulation is BPSK with FEC $1/3$, this system have the biggest processing gain is 2560 Kbps.

In comparing the two systems, can be know that TDMA system is more efficient in using capacity of transponder than CDMA system. This statement because the capacity of information bit rate in TDMA is 24.537,6 Kbps is bigger than 2560 Kbps that get from CDMA system. The two of result are from the calculation capacity of transponder satellite Telkom 2 that has 36 MHz capacity.

Keywords: satellite communication system, capacity, TDMA, and CDMA