

ABSTRACT

The development of telecommunication technology is growing so fast, included Satellite Communications Systems that hold an important role on it. Satellite communications technology is driven to be able for giving broadband services to user. The growth of services and user from satellite will give more attention to the use of satellite transponder, because it is limited resources and can't be replaced. Various services come from satellite has its own characteristics, especially if we look further on modulation type and multiple access. Some parameters that has been chosen from modulation, coding, multiple access to each services will cause the *bandwidth* needed will change according to the change of input parameter.

This research is directed to the calculation of bandwidth need from satellite for various service from the satellite operator in Indonesia. The parameter that has been chosen like multiple access TDMA, CDMA, various kind of digital modulation would give influence the *bandwidth* needed of each services from satellite operator, that finally could be used to calculate the bandwidth needed of national satellite infrastructure. There are two scenario that used in this research, first scenario is using low level modulation, without coding and second scenario is using higher level modulation and coding. The result of this research showed that there are some difference output from those scenario, the second scenario need more *bandwidth* meanwhile first scenario has more efficient *bandwidth* output. The need of satellite *bandwidth* resulting from this calculation would produce forecasting needed of satellite *bandwidth* for the next 10 years, so it could be made the roadmap of national satellite *bandwidth* needed and the strategy to fill those needed.

Key words : multiple access, modulation, *bandwidth*, transponder, satellite, broadband, TDMA, CDMA