ABSTRACT

High Throughput Satellite (HTS) is a satellite communication system that can produce multi-spot beams. This multi-spot beams is different from the other beam generated by conventional satellites that only produce one wide beam. HTS applies frequency reuse to produces a multi-spot beam, resulting an enormous throughput capacity. This enormous throughput capacity is the advantage of the HTS satellite.

This final project analyzes the use of V-Band frequency on High Throughput Satellite in Indonesia. The use of V-Band in this Final Project is the main consideration to produce a large throughput capacity and use frequency reuse as much as possible to produce an adequate number of multi-spot beams. This final project will compares three V-Band HTS scenarios, scenario 4C2F2P (four channels, two frequencies, two polarizations) with a bandwidth of 500 MHz, scenario 3C3F1P (three channels, three frequencies, one polarization) with a bandwidth of 300 MHz, and scenario 6C3F2P (six channels, three frequencies, two polarizations) with a bandwidth of 300 MHz.

The results showed that the large influence of bandwidth resulted in a larger amount of capacity. HTS 4C2F2P with a bandwidth of 500 MHz produces a larger capacity than HTS 3C3F1P and 6C3F2P with a smaller bandwidth of 300 MHz. The number of multi-spot beams produced also affects the amount of capacity generated. The application of V-Band in Indonesia, which has a tropical climate, has its own challenges, with the result of calculating the C/N value from each scenario touching a negative number, which is a bad enough result for implementing V-Band in Indonesia. However, the results show that with a footprint of 550, HTS is able to produce a capacity of 2 Tbps on HTS 4C2F2P with a bandwidth of 500 MHz compared to the other two scenarios, namely HTS 3C3F1P and 6C3F2P with a bandwidth of 300 MHz.

Key Word : High Throughput Satellite, multi-spot beam, V-Band, throughput, frequency reuse