

ABSTRACT

Satellite technology is a telecommunications technology where the satellite is a communication device placed in space. Satellite technology requires the allocation of the frequency spectrum for telecommunications services. The most widely used frequency for satellite communication is the C-Band frequency with a range of 4 GHz to 8 GHz and the Ku-Band frequency with a range of 12 GHz to 18 GHz. Also, the concern of the telecommunications industry nowadays is the frequency of Ka-Band with a range of 26,5 GHz to 40 GHz. Ka-Band frequency is one of the solutions in satellite communication because it has a large enough bandwidth so that it can accommodate more service capacity.

In this undergraduate thesis a microstrip antenna with a rectangular patch form has been arranged (array) with line feed rationing techniques consisting of four (2x2) elements. The selected working frequency of 29,25 GHz for satellite communication. The substrate material used was Rogers Duroid 5880 ($\epsilon_r = 2,2$ and $h = 0,787$ mm). The design is done by calculating the dimensions of the antenna so that it can design and simulate using antenna design software. The first step in the operation of this final project is designing one element antenna and after that is arranged into four elements.

Antenna simulation result in return loss value of -43,052 dB, VSWR is worth 1,014 with 2,728 GHz bandwidth. In addition, the resulting gain value is 7,823 dB with directional radiation patterns.

Keywords: Microstrip Antenna, Array, Satellite Communication, Ka-Band.