

ABSTRACT

Direct Broadcast Satellite is one of the service which can receive television show directly from satellite through receiver antenna (home dish). The conventional antenna used in the DBS communication system is a parabolic antenna, with a large size making it difficult in the installation process, and also the price is expensive. Therefore, in the last few years, the design of microstrip antenna will appear with a simple design, lightweight, and lower cost as a replacement of parabolik antenna. In addition, the frequency's capacity also needs to be considered because its development directly developed in Indonesia. The use of the C-Band frequency channel is currently widely used for terrestrial communication. Hence, it is required an increase in the frequency of channel with the use of frequency Ku-Band.

This final project will be the design and realization of 16 element (4×4) microstrip array antenna. The initial design is done by finding the dimension of the mathematical antenna, so it can be done simulation by using the software. The design of microstrip antenna was realized using Rogers Duroid 5880 substrate material with niali ($\epsilon_r = 2.2$ and $h = 1.57$ mm). The antenna works at frequencies of 11.7 - 12.2 GHz in accordance with ITU Region 3 regulations for DBS applications.

The result of realizing antenna generates 650 MHz bandwidth, VSWR value of 1.034, with a Return Loss value of -35.330, linear radiation pattern, and unidirectional radiation pattern. Furthermore, the resulting Gain is 18.43 dBi.

Keywords: Direct Broadcast Satellite (DBS), Ku-Band, Microstrip Antenna.