ABSTRACT

The need for communication is as important as the communication of information can be obtained. Growth communication requirements promote the development of wireless technologies, one of which is a satellite. At present, several universities in Indonesia was held in cooperation with LAPAN (Lembaga Penerbangan dan Antariksa Nasional) to make nanosatelit. Nanosatelit is a man-made satellite weighing less than 10 kilogram that can be programmed to monitor the weather conditions and the needs of emergency communications when disaster conditions. In this nanosatelit section, there are several components of communication that have their respective functions, one of which is the filter.

In this final project, had designed and realized Band Pass Filter (BPF) for transmitterr of nanosatellite communications. Filters are made is a DGS Split Ring Band Pass Filter-based microstrip. Microstrip is transmission line consisting of three layers of material, the layer conductor (patch), dielectric substrate, and the field of the earth (ground plane). Design method in this final project with the calculation using the equation to find the dimensions of the filter. The results obtained from the calculations are inputs for the simulation process using the software simulator CST (Computer Simulation Technology).

Information on the performance and characteristics of the prototype which has been made available from the test filter using a Network Analyzer. The parameters to be measured in this design include frequency response filter, bandwidth, insertion loss, return loss, Voltage Standing Wave Ratio, and terminal impedance. The results of measurements of the characteristics of the BPF are: the center frequency is 2299 MHz with a bandwidth of 44 MHz; there is frequency shift 126 MHz ot there is a tolerance about 5 %, bandwidth is decrease 6 MHz from initial specification 50 MHz, insertion loss 3.296 dB, return loss 14.160 dB (input) and 12.942 dB (output), VSWR 1.570 (input) and 1.632 (output), terminal impedance 63.929 -j23.029 Ω (input) and 45.977-j22.107 Ω (output).

Keywords: Bandpass filter, microstrip, SWR, bandwidth, Insertion Loss, Return Loss