

ABSTRACT

Electronic Support Measure is an electronic device that functions as a detector for electromagnetic wave signals emitted by the enemy. This tool is commonly used in the military field to protect an area so that enemies who want to enter the area illegally can be prevented. This ESM has a frequency range of 2-18 GHz, Gain 1-8 dBi, with an omnidirectional or unidirectional radiation pattern, the main components of the ESM are Antenna, Receiver, and Signal Processor.

In this final project, a rectangular patch microstrip antenna is designed at the X-Band frequency (8-12 GHz). The specifications compiled are Omnidirectional and elliptical polarization. Rectangular patches were chosen because they are easy to fabricate, they are simple in shape and easy to make, but the disadvantage is it has narrow bandwidth.

The material used in this final project is FR-4 Epoxy. The feed technique used is the Microstrip Feed Line which is paralleled into 3 channels, for determining the dimensions has been calculated theoretical and optimization processes have been carried out using software. In the final result of this antenna design at the center frequency is obtained VSWR 1,475, Gain 4.578 dBi, *Return Loss* -14,337 dB with Bandwidth of 4 GHz and polarization 31,6227 dB which makes this antenna elliptical polarized . with the result this antenna meets the specifications of the ESM.

Keywords : Electronic Support Measure, Antenna Microstrip, Microstrip Feed Line, X-Band