

Abstract

Electronic Support Measure (ESM) is an electronic equipment that serves to receive electromagnetic wave signal, then the signal is processed and analyzed to obtain the location (position), signal strength and other parameters. ESM works in the 2 - 18 GHz frequency range, with omnidirectional or unidirectional radiation pattern, and has a gain range of 1 - 8 dBi. ESM consists of 3 main devices namely antenna, receiver and signal processor.

In this final project the antenna designed is microstrip bowtie antenna (receiver) with bidirectional radiation pattern specification and elliptical polarization. This antenna works at X-band frequency (8-12 GHz) and gain ≥ 3 dBi. Bowtie antenna has several advantages, among others, simple-shaped, wide-banded and easy to make.

The materials used are Roger Duroid 5880 ($\epsilon_r = 2.2$, $h = 1.57$ mm, and $t = 0.035$ μm). The technique used for antenna optimization is the Coplanar Waveguide (CPW) unification technique. In the final result of designing the Microstrip Bowtie antenna it produces $VSWR \leq 2$ and gets a bandwidth of 4 GHz, the gain obtained from the antenna realization is ≥ 3 dBi. And the radiation pattern is bidirectional and polarization is elliptical. So that this antenna is suitable for use on Electronic Support Measure (ESM) devices.

Keywords: Microstrip Antenna, Electronic Support Measure, Microstrip Bowtie