ABSTRACT

The development of current military technology which is increasingly advanced has a positive impact in various fields of military defense equipment, especially in defense electronics technology. Military equipment used from year to year will be more sophisticated and more modern. With the development of technology in the military aspect, he had the idea of creating an Identification Friend Or Foe (IFF) system which would be applied to an SSR radar capable of distinguishing enemies from friends in the identification of aircraft approaching the target.

This IFF system has a separate Working Frequency, one for the integrator and one for the Receiver, where the integrator working frequency works at a frequency of 1030 MHz, and for the Receiver working frequency it works at a frequency of 1090 MHz. Antenna is one of the devices that play an important role for IFF communication, both for the integrator and for the receiver, signal reception is fulfilled, with the development of the antenna leading to the omni antenna type. In the IFF technology system consists of 3 models, sum, div and omni, in this final project focuses on omni antenna which is expected to accommodate the frequencies of 1030 MHz and 1090 MHz using FR4 substrate.

The Rectangular Patch microstrip antenna which is developed into a Single arrangement with the addition of Proximity will be simulated using 3D software whose results will be realized in physical form, the antenna shape is expected to be designed using a single arrangement method with each patch having a supply, with distances that can be far apart, thereby increasing the gain. The results of the antenna optimization carried out on 3D software, the results obtained at a frequency of 1030 MHz obtained a return loss of -21.996 dB and a VSWR of 1.172, while at a frequency of 1090 MHz the return loss was -10,570 dB and a VSWR of 1.849. In the fabrication results of the antenna there is a frequency shift to 1060 MHz. The return loss values obtained are -2.814 dB at a frequency of 1030 MHz and -4.497 dB at a frequency of 1090 MHz, with a VSWR of 6.208 at a frequency of 1030 MHz and 3.941 at a frequency of 1090 MHz.

***Keywords** : Proximity, IFF, Microstrip Antenna, Aircraft*