

## ABSTRACT

The use of electromagnetic waves has been vastly used for the fulfillment the needs all people in the world. One of the example is how it's been utilized for communication. Such as in long for distance communication, tool components, required transmitter and receiver. One of the components needed is the antenna. The antenna was designed as a passive element to send signals in the form of electromagnetic waves. However in its realization, the antenna is expected to have a good quality. This encourages the writer to analyzing other alternatives to enhance quality of the antenna by adding the dielectric element name Frequency Selective Surface (FSS). FSS will be added on the back side of antenna, which will be acts as a reflector.

In the performance analysis of the FSS which designed in this paper, the writer use computational electromagnetic algorithms with Method of Momen (MoM). MoM is used to figure the value of electric field E, which is generated upon parametes that are designed on the FSS. From that we will know the relation if field E with wide of FSS element . The computation with method of moment algortims will be calculated using Matlab R2011b software. To view the design and modeling simulation results of FSS will be tested on HFSS 13.0 software. The final results are expected to boost the gain on the FSS antenna and to work as a reflector antenna.

The design of FSS which used FR-4 material, shows that FSS which purposed as reflector can enhance gain of the antenna until 1,441 dBi. The diffrence FSS elements that purposed as reflector with other reflector, is located on the selection in a certain frequency range. Simulation results prove that with  $\epsilon_r = 4,4$ , results value of  $S_{11} = 0,9360$  at 1,3 GHz. When modified with  $\epsilon_r = 3,6$ , results value of  $S_{11} = 0,9429$  at 1,3 GHz. Thus it can be seen that the design of FSS elements can used for increase quality of radiation the antenna which used as reflector and the FSS elements can selecting the frequency at a certain range

***Key words : frequency selective surface, method of moment, antenna, reflector***