

ABSTRACT

Electromagnetic wave absorber has many uses, including overcoming interference, weakening unwanted wave energy, making anechoic chamber material, reducing the radar cross section of an object and much more. This has attracted the attention of various parties to research, develop, and apply absorber in certain fields.

In this Final Project, the selectivity analysis process of the absorber on S-Band, C-Band, and X-Band with L-Shaped Diagonal patterns has been designed using the approach method by calculating the dimensions of a square pattern. Selectivity was analyzed based on the Q factor value using bandwidth and resonant frequency parameters. Analysis of absorption is also carried out by reviewing the value of return loss. Characterization is done by changing one variable linearly while the other variables are still in order to see the trend of the absorber. Addition of passive components in the L-Shaped Diagonal pattern is done to determine the effect on the absorber performance. The simulation process is carried out using 3D Electromagnetic Design software.

From this study it was found that better absorption was obtained with a square pattern on the S-Band to obtain a return loss of -27.41 dB. Whereas on C-Band, L-Shaped Diagonal pattern is better with return loss of -20.8 dB. Then on X-Band L-Shaped Diagonal patterns get a better return loss of -20.8 dB. Addition of passive components is inefficient when the absorber has been optimized. Resistors affect matching, while capacitors are more effective as frequency shifters than inductors.

Keywords: Electromagnetic wave absorber, Q factor, bandwidth, return loss.