ABSTRACT

Electromagnetic wave absorbers have an important role in reducing electromagnetic wave interferences by minimizing reflected waves. Electromagnetic wave absorbers based on metamaterials have periodic arrangement structures composed of individual cells or elements capable of producing high impedance characteristics. This thesis proposes an AMC-based metamaterial to produce high absorption rates.

The proposed metamaterial absorber is expected to achieve multiband bandwidth by using a square split ring resonator multilayer with the square patch on the top layer. The type of unit cell is SRR which has the advantage of a simple shape and can produce a resonant frequency depending on the number of rings and various changes on the split or gap. To provide wide bandwidth is using multilayer technique with adding air gap between split-ring resonator on the bottom layer and square patch as a compliment on the top layer.

The proposed design work well based on range 2.37 GHz – 2.42 GHz and 3.65 GHz – 4.3 GHz with absorbtion rate above 90% on return loss minimum value at -10 dB. The absorption rate at 2.4 GHz is 96% and 3.7 GHz is 98%.

The final result of design can be used in many aplication way not only for anechoic chamber but also in antenna system and radar properties especially for stealth technology.

Keywords: Electromagnetic interference, AMC, SRR