

ABSTRACT

Absorbers in the RF/microwave realm are materials that attenuate the energy in an electromagnetic wave. Absorbers are used in a wide range of applications to eliminate stray or unwanted radiation that could interfere with a system's operation. Artificial Magnetic Conductor (AMC) based textured surface technology used in material absorber and the application using printed circuit board (PCB) as the material deployment. Bandwidth response of Artificial Magnetic Conductor (AMC) structure based microwave absorber is narrow, due to the characteristic of AMC structure its self which is construct from dielectric substrate as well as the bandwidth response of other devices such as antenna which is deployed on a dielectric substrate.

The method used in this research is single patch from square patch array because of effect from boundaries so the result for single patch is same as infinite square patch array. The result simulation result data is bandwidth response can be seen in S11 value in certain point which is from single square patch with length variation slot uniform and gradual length slot. The number of slot is from 1 to 21 slots odd number slot per single square patch and in the center position of patch. Although the resonant frequency is shifted as the presence of slot, it show that the bandwidth can be enhanced as the increase the number of slot and then after reach the peak point. Gradual slot shown have larger response bandwidth value than uniform length slots.

In this microwave absorber is design to work around 2,7 GHz frequency use FR4 EPOXY with permitivitty relative 4,4 f/m as dielectric substrate with 1,6 mm of thickness. It is calculated that length side of single square patch substrate is 24,5mm and side of patch is 22,5mm. The realization model of microwave absorber square patch array with 17 slot gradual is made and then measured sing parallel plate waveguide (PPW) simulator and the pure measurement result of absorber we can get after de-embedding process which is de-embedding process is to divided measurement value of Device Under Test (DUT) and the measurement instrument value it self.

Key word: Artificial Magnetic Conductor (AMC), Bandwidth, De-embedding, Device Under Test (DUT), Microwave Absorber, square patch array, Parallel Plate Waveguide (PPW).