MODELLING AND SIMULATION OF MICROSTRIP CIRCULAR PATCH ANTENNA

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ABSTRACT

A modified circular patch antenna used for ultra-wideband applications operating at a band of frequencies 3 to 10.4 GHz is modeled in this work. The geometry of the antenna has a circular disc monopole copper plate of radius r with 50 ohms microstrip feed line that is printed on the same side of the FR4 substrate. The dimensions, L denotes the length and W denote the width of the substrate. The microstrip line width is fixed at 2.6 mm to get 50 Ω impedance. At another side of the substrate, the microstrip feed line bottom section is covered by the copper ground plane of length, 21.25 mm. The performance is mainly based on the feed gap h and the dimension of the ground plane. The antenna structure and the final dimensions are fixed after performing an extensive simulation study. The parameters like ground plane, dimensions of the substrate, and size of the feed which affect the performance of the antenna in terms of its various characteristics such as radiation patterns, VSWR, return loss, radiation efficiency and gain are investigated. This modeled antenna is operated at various frequencies and observed that the circular patch antenna can be used for various applications in the ultra-wideband range.

KEYWORDS: UWB (Ultra Wide Band) & Circular Patch