Design of Sierpinski Carpet Fractal Antenna using Artificial Neural Networks

Abstract

This paper deals with utilization of artificial neural networks for the design of Sierpinski carpet fractal antenna. The difficulty in designing of fractal microstrip patch antennas is due to the involvement of large number of physical parameters and hence their associated optimal values. It is indeed very difficult to formulate an exact numerical solution through empirical studies based on practical observations. In order to circumvent this problem, an alternative solution is achieved using artificial neural networks. The proposed technique used feed-forward back-propagation artificial neural network (FFBP-ANN) with one hidden layer to approximate neural model of this antenna. Sierpinski carpet fractal antenna is simulated using IE3D software. The investigation is done between the ranges of frequencies from 1 to 20Ghzs. The results obtained by using artificial neural networks are in agreement with simulated results.
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Index Terms

Computer Science
Neural Networks

Keywords
Fractal  Carpet  Artificial Neural Networks  Sierpinski  Antenna