

PERFORMANCE MODELING AND SIMULATION OF MICROSTRIP DIPOLE ARRAY ANTENNA FOR WLAN APPLICATION

Abstract

This paper proposed a performance simulation of a two-element, microstrip dipole array antenna for WLAN application. Simulation is done using two different simulation techniques, the circuit model (CM) derived from the Transmission Line Model (TLM), and is compared with another simulation set using the Method of Moments (MoM). Both methods are simulated using Microwave Office. The basic microstrip dipole antenna is accurately modeled and the linear array structure is done by combining two basic units. Both simulation sets of MoM and CM are evaluated to determine their level of variation in terms of return loss (S_{11}), bandwidth and resonant frequency (f_{res}). The MoM designed for dipole antennas achieved the best return loss (S_{11}), bandwidth and resonant frequency (f_{res}) at the desired frequency. The equivalent circuit proposed produced good return loss and comparable with simulation using MoMs. Details of the proposed antenna design and simulation results for 2.45 GHz WLAN band are presented and deliberated

Author Keywords - Antenna arrays; Circuit model; Dipole antennas; Method of moments; Transmission line model