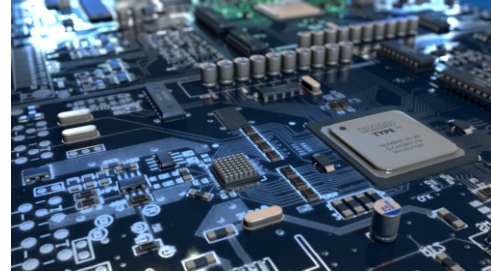


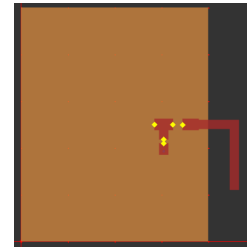
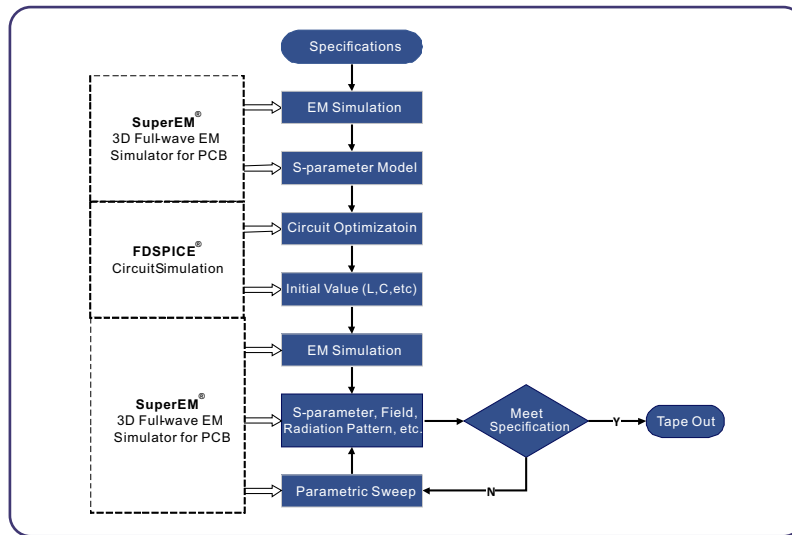


Introduction

Antenna impedance matching involves aligning the impedance of the antenna with either the output impedance of the signal source or the input impedance of the receiving equipment to facilitate optimal signal transmission. Inadequate impedance matching in the transmitting antenna can result in reduced signal transmission power, shortened transmission distances, and potential damage to antenna components. Conversely, in the receiving antenna, impedance mismatch may diminish reception sensitivity and introduce noise interference, thereby compromising the quality of the received signal. Consequently, impedance matching emerges as a pivotal element in ensuring effective communication performance.

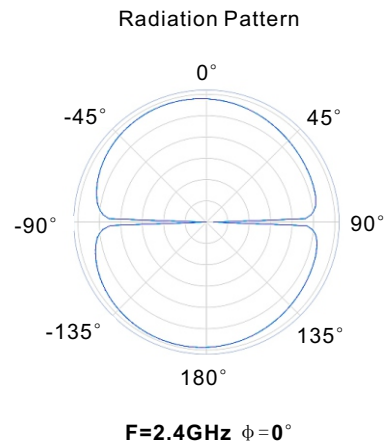
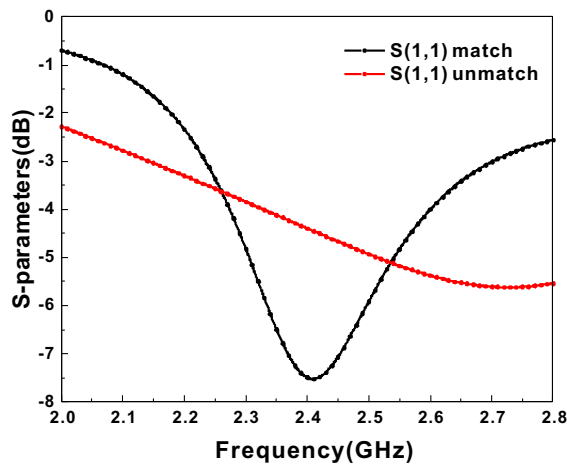


Design Methodology



The Monopole antenna is fabricated using a conventional PCB process, featuring a dielectric constant of 4.6 and a loss tangent of 0.01. It has a profile height of 1.6 mm, a metal thickness of 0.035 mm, and operates at 2.40 GHz. Impedance matching for the antenna is achieved through the utilization of a lumped circuit elements.

Simulation Results



FDSPICE® imports S-parameter acquired from simulations conducted in SuperEM® into S Model, facilitating the construction and optimization of the circuit diagram. This approach enables rapid acquisition of initial values for R, L, and C, significantly narrowing the parameter scanning range in layout simulations and reducing the overall time required for antenna matching network design.