UWB Antenna Design and Simulation Report

1. This project presents the design and simulation of a compact Ultra-Wideband (UWB) antenna using Ansys HFSS. The antenna, with dimensions of 40 mm × 46.4 mm × 1 mm, is engineered to operate efficiently over a broad frequency range from 8 GHz to 35 GHz. Simulation results demonstrate strong return loss characteristics, with key resonances at 9.06 GHz, 16.98 GHz, and 32.8 GHz, confirming effective multi-band operation. The electric field distribution indicates high radiation efficiency and good impedance matching, making the antenna suitable for applications in 5G communications, radar systems, satellite links, and UWB networks. Its compact size, ultra-wide bandwidth, and robust performance position it as a promising candidate for integration into modern wireless and sensing systems.