Abstract

A major challenge in the transmission of narrow pulses is the radiation characteristics of the antenna. Designing the front ends for UWB systems pose challenges compared to their narrow and wide band counterparts because in addition to having electrically small size, high efficiency and band width, the antenna has to have excellent transient response. The present work deals with the design of four novel antenna designs- Square Monopole, Semi-Elliptic Slot, Step and Linear Tapered slot - and an assay on their suitability in UWB systems. Multiple resonances in the geometry are matched to UWB by redesigning the ground-patch interfaces. Techniques to avoid narrow band interference is proposed in the antenna level and their effect on a nano second pulse have also been investigated. The thesis proposes design guidelines to design the antenna on laminates of any permittivity and the analyzes are complete with results in the frequency and time domains.