This thesis deals with the study, design and implementation of planar ultra-wide band (UWB) antennas. The first part presents the design, analysis and measurement of a modified circular monopole antenna with defected ground structure (DGS) for UWB applications. The second part investigates two dual band notch UWB antennas. The last part concerns the design of diversity/MIMO antenna that works in the UWB. A good agreement between the simulation and the measurement results was observed validating the different configurations and the adopted design procedures.