This thesis focuses on the study, design and implementation of multi-band microstrip planar antennas. In the first part we present an overview of microstrip antennas, their characteristics, operating theory and feeding techniques, then the various techniques used in the design of multi-band antennas. The second part deals with developing, testing and manufacturing compact tri-band antennas for wireless applications; in the third part we present a frequency reconfigurable antenna with ideal switches. The fourth part is devoted to the design of a four frequency band quasi-yagi antenna. In the last part, we present a compact antenna design using the L-shaped slots technique for multiband applications with five frequency bands. The measurement and simulation results shows strong agreement, thus validating the various proposed configurations and the design procedures adopted