Executive Summary of the Minor Research Project entitled "Some Studies on Design and Development of Rectangular Microstrip Antennas".

An antenna is very important component of microwave communication system and without which no communication over a distance is possible. Innumerable types of antennas have been described and developed for the use at different frequency bands. They are of different shapes and sizes and are made of both conductors and dielectrics.

Among the various types of microwave antennas, the microstrip antennas (MSAs) have found one of the important classes within the broad field of microwave antennas because of their diversified applications in microwave communication systems.

There are several types of MSAs available in practice. But rectangular microstrip antenna is the simplest in its configurations compared to the other MSAs. However, the MSAs are also having some drawbacks compare to conventional microwave antennas. One of the main drawback is narrow bandwidth. This restricts the applications of MSAs to a grate extent. In view of this an attempt is made to enhance the bandwidth of rectangular microstrip antennas (RMSAs) by placing optimum slots and parasitic strip in conducting plane without changing the nature of radiation characteristics. This techniques makes antenna to resonant for quad, penta, hexa, hepta and multi bands. Performance of all these antennas are systematically studied and discussed in this report. The enhancement of bandwidth of RMSAs is achieved at (3-12 GHz) band of frequencies. The multi band operations of these antennas may find applications in microwave communication systems.

The report is mainly divided into six chapters. In chapter I explanation about MSAs is given. The chapter II deals with an elaborative review of past work done on RMSAs and formulation of research problem. Design and fabrication of RMSAs are discussed in chapter III

. The methodology and experimental setup are given in chapter IV. Chapter V presents experimental results measured for conventional RMSA, parallel slot RMSA, L slot RMSA, parasitic strip RMSA, narrow slot RMSA, inclined slot RMSA and circular slot and parasitic strip RMSA etc. The conclusion, remarks and futuristic scope of this work is highlighted in chapter VI. The reference, publications made by the author are given at the end of this report. Some of the outcome of this research work has been published in reputed peer reviewed International Journal (having highest impact factor of 1.686) i.e. International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (IJAREEIE) Vol. 3, Issue 11, November 20114, pp 13246-13252. Full length paper is enclosed at the end of the report.

PRINCIPAL INVESTIGATOR