LIST OF FIGURES

A BRIEF SUMMARY OF THE DISSERTATION

The work presented in this dissertation was carried out by the author during 2000-2001. The high gain antenna designed and constructed behind Physics Department, Shivaji University, Kolhapur is first perhaps in India. This antenna operates at 30 MH_Z.

This dissertation contains six chapters in all.

An introduction to the dissertation is given in chapter one. This contains, in brief, a discription of ionospehre, ionospheric absorption, methods of measuring ionospheric absorption, working of riometer and cosmic radio noise etc.

Chapter two describes briefly the antenna arrays and its relevant theory. A theory of the thin linear antenna and linear arrays explained.

Description of the antenna fundamentals is given in the chapter three. This chapter also explains reciprocity theorem, applications of network theorems to antenna, characteristics of the antenna, types of antenna, antenna arrays and impedance matching etc.

Chapter four presents the designing and construction of high

gain, narrow beamwidth antenna array. This antenna array was constructed for riometer setup by Indian Institute of Geomagnetism (I.I.G.)in our department.. In this chapter first designing and construction of pilot antenna is explained. Next, details of the materials used to construct the antenna array is explained. Lastly the final antenna structure is explained.

Measurements and testing of a high gain antenna is explained in the chapter five. This chapter contains, block diagram of a riometer, standard antenna sent by IIG to measure the cosmic radio noise absorption with solid state riometer. This chapter contains antenna measurements also. Method of calculating ionospheric attenuation is included in this chapter.

The last and the sixth chapter consists of the scope for future study and conclusion.