Acknowledgements

It was my strong belief that any research and development activity cannot be completed with fruitful results without cooperation and support from number of persons. My present endeavour has further strengthened my belief. I take this opportunity to personally thank each one of them who have contributed to make it happen.

First of all I am very thankful to my research guide Prof. Utpal S. Joshi, who had provided me continuous inspiration, support and guidance which was invaluable for me. I had been benefitted by his deep and profound knowledge of the subject and was fortunate to learn plenty of things from him. This work could not have reached to this shape without his patiently made persistent efforts.

I am expressing my sincere gratitude to Mr Tapan Misra, Director, Space Applications Centre (SAC), Indian Space Research Organisation (ISRO), Ahmedabad, who had provided continues support and encouragement during the course of this work. I am thankful to Mr Apurba Bhattacharya, Deputy Director, (ESSA), SAC/ISRO, who had encouraged and guided me for this research. He had also introduced me with microwave aspects of the devices which determine the requirements of the material.

Enormous help was provided during the experimental activities at SAC in terms of sample fabrication and characterization support by Mr Sriranganath Annam, Mr M R Patel, Mr P R Sarvaiya, Mr R K Kaneria, Mr C M Trivedi, Mr B N Pandya, Ms Gunjan Rastogi, Dr K Jalaja, Mr Aniket,
Mr Tejas Patel, Mr Bijju Kumar, Mr Ajit, Mr Rajkumar, Ms Pinal, Mr V B Joshi, Mr H K Parmar, Mr Kiran Rathod, Mr Sushant, and Mr Nitesh Sharma. The list is non-exhaustive and uncountable. I express my sincere thanks to all the persons who have helped during this work.

I am thankful to Prof. P. N. Gajjar, Head, Department of Physics, Gujarat University, who had provided encouragement for this work and he was kind enough for permitting me to avail departmental facilities. I am also very grateful to all faculty members of the department, Prof. R.B. Jotania, Prof. V.A. Rana, Prof. P.R. Vyas, Prof. Deepti S. Tripathi, Prof. M.E. James, Prof. P. D. Lele, Dr. S.M. Vyas, Dr. A.B. Patel and Mr. D. B. Patel at Department of Physics, School of Sciences, Gujarat University, Ahmedabad for their active co-operation and guidance whenever required. I would like to thank non-teaching staff especially Mr. Bharatbhai, Mrs. Harshaben Shah, Mr. Devendrabhai for their help and support during the period of my Ph.D. tenure.

I am indebted by the extensive support and cooperation extended by Mr Nirav Pandya and Mr Nikhil Joshi during entire course of work. I express my heartiest thanks to both of them. I also extend my sincere thanks to my colleagues Dr Komal Bhavsar, Dr Bhaumik Mistry and Mrs Sinny Trivedi for all the help and support extended by them whenever required. I express my deep appreciation towards my junior colleagues Rutvi Pandya, Mahendra Chaudhari, Jigar Chaudhari, Purnima Senguntha, Aesha Panchal, Komal Sharma, Hitarthi Patel, Margi Jani and Shivangi Patel for their delightful interactions making my stay at laboratory very pleasant.
My family and friends had played catalytically during this period, backing me on every walk of the journey. The sacrifices and understanding of my wife Mrs Neha Upadhyay during this tough period is commendable which I would never be able to compensate. I am truly express my heartiest thanks to her. My children Ms Urva and Master Pranjal had always played a very joyful role in my life keeping me delighted all the time and always supported me in whatever way they could. I express my everlasting love for both of them. I am thankful to Mr Bharat Nagvadia for their well-wishes and guidance. I am also thankful to all my family members and friends for their support. I express my sincere gratitude towards them.

R B Upadhyay