

DEDICATION

This thesis is compiled with the support of my family. I praise ALLOH SUBHANAHU WATA 'ALA and thanks to all who have helped, directed, and supported this work. I dedicate the work to my beloved parents EMUH MUHIKIN and SITI MAEMUNAH, my wife NUR AISAH MUNAWAROH and my childrens ADIBA HAFIDZAH
MUTMAINNAH and NAYYARA BILQIS SADIDAH.

Finally this thesis is dedicated to all electrical students in the world. I hope that this research may provide valuable contribution in Electrical Engineering.

ACKNOWLEDGMENTS

This thesis is compiled with the effort, help, and support from both students and lecturers. I would like to express my deepest gratitude and thanks to:

1. Dr. Ida Wahidah, S.T., M.T. Head of Master Electrical Engineering
2. Dr. Ir. Sony Sumaryo, M.T. Supervisor
3. Syamsul Rizal, S.T., M.Eng., Ph.D. Co-Supervisor
4. Dr. Rizki Ardianto Priramadhi, S.T., M.T. Chairperson of the jury
5. Dr. Inung Wijayanto, S.T., M.T. Jury
6. Kharisma Bani Adam, S.T., M.T., Ph.D. Jury
7. Dr. Ir. RINA PUDJI ASTUTI M.T.
8. Dr. -Ing FIKY YOSEF SURATMAN S.T., M.T.