ACKNOWLEDGEMENT

All praise and gratitude to the presence of Allah the Glorious, who has given His grace and grace, so that the author can complete this thesis as a requirement for graduation in the Master of Electrical Engineering study program at Telkom University.

I would like to thank all those who have helped and supported the author in completing this thesis. The author expresses his gratitude to:

- 1. Allah SWT, because thanks to His mercy and grace, the author can complete this thesis.
- 2. My father Yulius Antoni, my mother Julaeha Sukarman, Luthfi Faiz Khairi, Lifia Meilani and her family, as well as extended family in Majalengka and Payakumbuh who always support and pray for the author to finish this thesis.
- 3. Mr. Muhammad Zakiyullah Romdlony, Ph.D. as Supervisor and Dr.Eng. Willy Anugrah Cahyadi, S.T., M.T. as Co-Supervisor in this research who has provided advice, guidance, and motivation to complete this thesis.
- 4. Mr. Angga Rusdinar, S.T., M.T., Ph.d. and Dr. Rizky Ardianto Priramadhi, S.T., M.T. as examiners who have provided constructive input in the research.
- 5. Mrs. Bandiyah Sri Aprilia, S.Si, M.Sc., Mr. Ivan and research colleagues in the residency room of Building G, TULT 14.10, and FTE laboratory staff who have supported this research work.
- 6. As well as thanks to all parties who have helped the author in completing this final project which cannot be mentioned one by one.

May all the kindness of all those who have supported and helped the author in completing this final project be rewarded by Allah.