

CONTENTS

| | |
|--|------|
| ABSTRACT | ii |
| ACKNOWLEDGEMENTS | iv |
| CONTENTS | v |
| LIST OF FIGURES | viii |
| LIST OF TABLES | xi |
| NOMENCLATURES | xiii |
| Abbreviations | xvi |
| Superscripts | xvii |
| Subscripts | xvii |
| | |
| CHAPTER 1: INTRODUCTION | 2 |
| 1.1 Background of TV energy consumption | 3 |
| 1.2 Objectives of study | 6 |
| 1.3 Limitations of study | 7 |
| 1.4 Organization of the thesis | 8 |
| | |
| CHAPTER 2: LITERATURE REVIEW | 10 |
| 2.0 Introduction | 10 |
| 2.1 Overview of previous studies | 11 |
| 2.2 History of appliance standard | 15 |
| 2.3 Energy standard and label programs for TV sets throughout the world | 16 |
| | |
| CHAPTER 3: RESEARCH METHODOLOGY | 20 |
| 3.0 Introduction | 20 |
| 3.1 Energy test procedure | 20 |
| 3.2 Development of test procedure | 22 |

| | | |
|---|---|------------|
| 3.3 | Equipment utilized | 26 |
| 3.4 | Energy efficiency standard | 27 |
| 3.5 | Development of energy efficiency standard | 29 |
| 3.6 | Data collection method | 37 |
| 3.7 | Impact of energy efficiency standard | 38 |
| 3.8 | Energy Label | 53 |
| 3.9 | Energy label development | 55 |
| 3.10 | Impact of energy label | 57 |
| 3.11 | Prediction of market transformation | 66 |
| CHAPTER 4: RESULTS AND DISCUSSIONS | | 68 |
| 4.0 | Introduction | 68 |
| 4.1 | Results from household survey | 69 |
| 4.2 | Results from active power and standby power data collection | 71 |
| 4.3 | Data collection and assessment | 74 |
| 4.4 | Data assessment | 77 |
| 4.5 | Estimation of TV sets annual efficiency improvement | 82 |
| 4.6 | Estimation of TV sets saturation level | 87 |
| 4.7 | Energy efficiency standard | 89 |
| 4.8 | Energy label | 121 |
| 4.9 | Impact of standard and label | 132 |
| CHAPTER 5: CONCLUSION | | 155 |
| 5.0 | Conclusions | 155 |
| 5.1 | Recommendations for further study | 157 |
| 5.2 | Barriers to the implementation of standard and label program | 157 |
| REFERENCES | | 159 |
| APPENDIXES | | 169 |
| Appendix A | Related Publications | 169 |

| | | |
|------------|---|-----|
| Appendix B | Questionnaires and survey data | 171 |
| Appendix C | Proposed Malaysian standard for measuring power consumption of television sets | 197 |
| Appendix D | Data assessment and sample calculation | 208 |
| Appendix E | Energy label | 223 |