

LIST OF FIGURES

Figure 1.1 The Distribution of Cellular Communication Networks in Indonesia..	1
Figure 1.2 The Distribution of Palapa Ring Submarine Cable Backbone Across Indonesia	2
Figure 1.3 Existing Condition of INS's Orbital Slots	3
Figure 2.1 Integration scheme of satellite communication	13
Figure 2.2 The Differences Between HTS and Conventional Satellite	17
Figure 2.3 The Trends of HTS in a Few Years	19
Figure 2.4 Satellite Payload Architecture: (a) Bent Pipe; (b) Regenerative	20
Figure 2.5 Multiple Spot Beam in HTS System	21
Figure 2.6 The Graphic of Multi Spotbeam Orthogonality	23
Figure 2.7 The Setting of Orthogonality for each beam	23
Figure 2.8 The Scheme of Frequency Reuse Usage on HTS: (a) 3 colors; (b) 4 colors; (c) 6 colors	24
Figure 2.9 Directional Antenna Radiation Pattern.....	27
Figure 2.10 Directional Antenna Radiation Pattern in 2 Dimensions.....	27
Figure 2.11 Satellite Filing Registration Procedure.....	35
Figure 2.12 Region Classified by ITU	35
Figure 3.1 Research Framework	37
Figure 3.2 The Service Point Distribution Collected by the Indonesian Government	40
Figure 3.3 Research Scenarios Diagram	42
Figure 3.4 Technical Analysis of Research	43
Figure 3.5 Expected Illustration on the Coverage Simulation	44
Figure 3.6 Techno-Economic Analysis.....	45
Figure 4.1 Proposed Frequency Plan of Ku-Band	49
Figure 4.2 Illustration of Earth Viewing Angle from Satellite	57
Figure 4.3 Simulation result of Ku-Band HTS Multi-Spot Beam Plot across Indonesia	58
Figure 4.4 Proposed Frequency Plan of Ka-Band.....	63

Figure 4.5 Simulation result of Ka-Band HTS Multi-Spot Beam Plot across Indonesia.....	70
Figure 4.6 The Comparison of Ku and Ka-Band Satellite’s Supply towards the Indonesian Government’s needs	76
Figure 4.7 The Common Use of Beamwidth for Ku and Ka-Band Satellite	78
Figure 4.8 The Optimized Beam Allocation for Ku-band HTS.....	79
Figure 4.9 The Optimized Beam Allocation for Ka-band HTS	80
Figure 4.10 The Optimized Result of the Indonesian Government’s HTS Supply and Demand	82
Figure 4.11 The Composition of the Satellite Industry Market Players	83
Figure 4.12 The BMC of HTS Operator Perspective in this Research	84
Figure 4.13 The Satellite Business Life-Cycle	85
Figure 4.14 NPV Projection Graph of Ku-Band HTS Implementation	98
Figure 4.15 NPV Projection Graph of Ka-Band HTS Implementation	99
Figure 4.16 Interest Rate towards NPV Graph of Proposed HTS.....	100
Figure 4.17 Profitability Index of HTS	103
Figure 4.18 The Spider Web Chart Represents Ku-Band HTS’s Sensitivity Analysis.....	106
Figure 4.19 The Spider Web Chart Represents Ka-Band HTS’s Sensitivity Analysis.....	114