

## TABLE OF CONTENTS

<b>APPROVAL PAGE</b> .....	<b>i</b>
<b>ABSTRACT</b> .....	<b>vii</b>
<b>TABLE OF CONTENTS</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>x</b>
<b>CHAPTER I INTRODUCTION</b> .....	<b>1</b>
1.1 Background .....	1
1.2 Problem Identification .....	4
1.3 Objective .....	5
1.4 Scope of Work .....	5
1.5 Hypothesis .....	6
1.6 Research Methodology .....	6
<b>CHAPTER II LITERATURE REVIEW</b> .....	<b>8</b>
2.1 System of Satellite Communication .....	8
2.2 Frequency Spectrum .....	9
2.3 High Throughput Satellite (HTS) .....	10
2.3.1 HTS Architecture System .....	12
2.3.2 Multi-Spot Beam .....	12
2.3.3 Multi-beam Antenna Array .....	13
2.3.4 Frequency Reuse .....	14
2.3.5 Co-Channel Interference (CCI) .....	16
2.3.6 Cross-Polarization (XPI) .....	28
2.4 Technical Aspect of HTS .....	29
2.4.1 Coverage Area Analysis Approach .....	29
2.4.2 Capacity Analysis Approach .....	37
2.5 Economic Aspects of HTS CCI .....	38
2.6 Regulatory Aspect of HTS .....	38
2.6.1 International Telecommunication Union (ITU) .....	39
2.6.2 National Regulation .....	42
<b>CHAPTER III RESEARCH METHODOLOGY</b> .....	<b>45</b>
3.1 Research Flow .....	45
3.2 Related Information Data .....	47
3.2.1 Parameters of Indonesian HTS-A Satellite .....	47

3.2.2	Earth Station Parameters .....	49
3.3	Economic Analysis of HTS.....	50
3.4	Regulatory Analysis of HTS .....	51
<b>CHAPTER IV RESULT AND DISCUSSION.....</b>		<b>52</b>
4.1	Technical Analysis Result.....	52
4.1.1	Frequency Plan Indonesian HTS-A .....	52
4.1.2	Color Scheme and Frequency Reuse.....	54
4.1.3	Link Budget Before Interference .....	55
4.1.4	Link Budget After Interference.....	58
4.1.5	Link Budget Capacity Comparison Before and After Interference .....	65
4.2	Economic Analysis Result .....	69
4.3	Regulation Analysis Result.....	76
4.4	Comparison Economic HTS Ku-band and Classical C-band on HTS-A... 77	
4.5	Technical Recommendation of Future HTS Technology Relation on CCI Mitigation .....	81
<b>CHAPTER V CONCLUSION, RECOMMENDATION, AND FUTURE WORKS .....</b>		<b>87</b>
5.1	Conclusion .....	87
5.2	Recommendation.....	89
5.3	Future Works.....	90
<b>REFERENCE .....</b>		<b>92</b>