

TABLE OF CONTENTS

APPROVAL PAGE	2
SELF DECLARATION AGAINST PLAGIARISM	3
ABSTRACT	4
ACKNOWLEDGEMENTS	5
PREFACE.....	6
TABLE OF CONTENTS.....	7
LIST OF IMAGES.....	10
LIST OF TABLES.....	13
CHAPTER I	16
INTRODUCTION.....	16
1.1 Background.....	16
1.2 Research Purpose.....	18
1.3 Identification of Problem.....	18
1.4 Scope of Problems.....	19
1.5 Research Method.....	19
1.6 Hypothesis	19
1.7 Research Methodology	20
1.8 Timeline.....	20
CHAPTER II.....	21
LITERATURE REVIEW.....	21
2.1 Satellite Communication System.....	21
2.2 GSO and non-GSO	21
2.2.1 Geostationary Orbit.....	21
2.2.2 Non-Geostationary Orbit.....	22
2.3 High Throughput Satellite	23
2.3.1 Frequency Spectrum.....	24
2.3.2 Ku-Band	25
2.4 Latency and Jitter	25
2.4.1 Latency on Different Orbit.....	27
2.5 Ku-Band Propagation	27
2.5.1 Bandwidth	28
2.5.2 Link Availability.....	29

2.5.3	Link Budget.....	29
2.5.4	Adaptive Code Modulation	38
2.5.5	Quality of Service	38
2.6	Starlink System Description	39
2.7	BRISAT System Description	39
2.8	User Experience.....	40
2.8.1	Quality of Experience.....	40
2.8.2	User Experience Element.....	41
2.8.3	Sampling	42
2.9	Technology Acceptance Model.....	42
CHAPTER III	46
RESEARCH METHODOLOGY	46
3.1	Research Design	46
3.2	Network Topology	47
3.3	Data Analysis.....	48
3.2.1	Data Earth Station	49
3.2.1.1	Data Satellite.....	50
3.2.2	Research Population.....	51
3.2.3	Research Sample	51
3.2.4	Data Sampling	51
3.2.5	Operationalization of Variables	54
3.2.6	Data Quality Test.....	59
3.2.6.1	Data Validity Test.....	59
3.2.6.2	Data Reliability Test	60
3.2.6.3	Mann Whitney U Test.....	60
3.2.6.4	Confidence Interval Test	61
3.3	Tools for data analysis	62
CHAPTER IV	63
DATA PRESENTATION AND ANALYSIS	63
4.1	Data Presentations	63
4.2	Pre Test	63
4.3	Test Data Analysis	65
4.3.1	Day 1 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	67
4.3.2.1	Starlink.....	67

4.3.2.2 BRISat.....	73
4.3.2.3 Comparison on Result Day 1	78
4.3.2 Day 2 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	87
4.3.3.1 Starlink.....	87
4.3.3.2 BRISat.....	93
4.3.3.3 Comparison on Result Day 2	99
4.3.3 Day 3 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	108
4.3.4.1 Starlink.....	108
4.3.4.2 BRISat.....	114
4.3.4.3 Comparison on Result Day 3	120
4.3.4 Day 4 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	128
4.3.5.1 Starlink.....	128
4.3.5.2 BRISat.....	134
4.3.5.2 Comparison on Result Day 4	140
4.3.5 Day 5 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	149
4.3.6.1 Starlink.....	149
4.3.6.2 BRISat.....	155
4.3.6.1 Comparison on Result Day 5	161
4.3.6 Day 1 - 5 Evaluation of Latency, Jitter, Throughput and User Experience for BRISat and Starlink	170
4.3.7.1 Starlink.....	170
4.3.7.2 BRISat.....	174
4.3.7.3 Comparison on Result Day 1-5.....	178
CHAPTER V	183
CONCLUSIONS AND FUTURE WORKS	183
5.1 Conclusions	183
5.2 Future Works	184
References.....	185