

TABLE OF CONTENT

APPROVAL PAGE	i
SELF DECLARATION AGAINST PLAGIARISM	ii
ABSTRACT	iii
PREFACE	iv
ACKNOWLEDGEMENT	v
TABLE OF CONTENT	vi
LIST OF FIGURES	ix
CHAPTER I INTRODUCTION	1
1.1 Background	1
1.2 Problem Identification	4
1.3 Objectives	7
1.4 Scope Of Works	7
1.5 Hypothesis	8
CHAPTER II BASIC CONCEPT	9
2.1 Satellite Communications System Overview	9
2.2 GSO	10
2.3 Non-GSO	10
2.4 Frequency Allocation for Space	11
2.5 Interference Between Satellite Systems	13
2.6 Regulatory Framework	14
2.6.1 ITU-R Article 22	14
2.6.2 ITU-R Recommendations S.1503	15
2.7 EPFD and Worst-Case Geometry	16
2.7.1 EPFD	16
2.7.2 Worst Case Geometry Concept	18
2.7.3 Downlink WCG Algorithm Important Parameter	19
2.7.3.1 Alpha Angle (α)	19
2.7.3.2 Time Step Size and Number of Time Steps	24

2.7.3.2.1	Derivation of <i>Nhits</i>	26
2.7.3.2.2	Total Simulation Run Time.....	27
2.7.3.2.3	Overall Description of The Decision Process.....	28
2.8	EPFD Downlink Validation Inputs.....	30
2.8.1	PFD Mask Format and Structure.....	30
2.8.2	Observation Object: USASAT-NGSO-3X.....	32
2.8.2.1	Space Radio Services Database	33
CHAPTER III RESEARCH METHODOLOGY		34
3.1	Research Framework.....	34
3.2	EPFD Validation Scenario.....	35
3.3	WCG Algorithm Analysis	36
3.3.1	WCGADown.....	38
3.3.2	GetWCGA_Down	38
3.3.3	CheckWCG_Down.....	39
3.3.4	CheckExtremeWCG	40
3.3.5	FindThetaFromAlpha	41
3.3.6	CheckCase.....	42
CHAPTER IV RESULTS AND ANALYSIS		43
4.1	Overview	43
4.2	PFD Mask Data Analysis.....	43
4.4	EPFD Validation	48
4.4.1	Scenario I.....	49
4.4.2	Scenario II.....	50
4.4.3	Scenario III	51
4.4.4	Scenario IV	53
4.4.5	Scenario V	55
4.5	Result Summary	57
CHAPTER V CONCLUSION AND FUTURE WORKS		59
5.1	Conclusion.....	59
5.2	Recommendation	60
5.3	Future Works	60

APPENDIX A.....	61
APEENDIX B	64
REFERENCES	67