

# **CONTENTS**

## **LEMBAR PENGESAHAN**

## **LEMBAR PERNYATAAN ORISINALITAS**

<b>ABSTRAK</b>	<b>iv</b>
<b>UCAPAN TERIMA KASIH</b>	<b>v</b>
<b>Contents</b>	<b>vi</b>
<b>List of Figures</b>	<b>ix</b>
<b>List of Tables</b>	<b>xi</b>
<b>DAFTAR SINGKATAN</b>	<b>xii</b>
<b>I INTRODUCTION</b>	<b>1</b>
1.1 Introduction . . . . .	1
1.2 Problem Identification . . . . .	2
1.3 Objective and Contribution . . . . .	2
1.4 Scope of The Thesis . . . . .	2
1.5 Research Method . . . . .	3
1.6 Book Structure . . . . .	3
<b>II BASIC CONCEPTS</b>	<b>5</b>
2.1 Antenna . . . . .	5
2.1.1 Gain . . . . .	5
2.1.2 VSWR . . . . .	5
2.1.3 Radiation Pattern . . . . .	6
2.2 Ultra-Wideband (UWB) . . . . .	6
2.2.1 Requirement For a Large Bandwidth . . . . .	6
2.2.2 Low Cost and Low Power . . . . .	7
2.3 UWB Planar Monopole Antenna . . . . .	7
2.4 Frequency Selective Surface . . . . .	8

<b>III PROPOSED MODEL OF ANTENNA</b>	<b>10</b>
3.1 Flowchart Antenna Design . . . . .	10
3.2 Antenna Design . . . . .	11
3.2.1 Circular Patch . . . . .	11
3.2.2 Feed Line . . . . .	12
3.2.3 Ground Plane Substrate . . . . .	13
3.3 Frequency Selective Surface Design . . . . .	14
3.4 Flowchart FSS Design . . . . .	15
3.5 Simulation with CST . . . . .	16
3.5.1 Initial Antenna Design . . . . .	16
3.5.2 Antenna Iteration 1 . . . . .	17
3.5.3 Antenna Iteration 2 . . . . .	19
3.5.4 Antenna Iteration 3 . . . . .	20
3.5.5 Initial FSS Design . . . . .	22
3.5.6 FSS Design Iteration 1 . . . . .	25
3.5.7 FSS Design Iteration 2 . . . . .	27
3.5.8 FSS Design Iteration 3 . . . . .	29
3.5.9 FSS Design Iteration 4 . . . . .	31
3.5.10 Antenna Realization . . . . .	34
<b>IV RESULT AND ANALYSIS</b>	<b>36</b>
4.1 Antenna Measurement . . . . .	36
4.2 VSWR Measurement Procedure . . . . .	36
4.3 VSWR Measurement Result . . . . .	37
4.4 Gain Measurement Procedure . . . . .	40
4.5 Gain Measurement Result . . . . .	40
4.6 Radiation Pattern Measurement Procedure . . . . .	41
4.7 Radiation Pattern Measurement Result . . . . .	41
4.8 Comparison Measurement and Simulation Results . . . . .	43
4.8.1 Measurement and Simulation VSWR . . . . .	43
4.8.2 Measurement and Simulation Gain . . . . .	44
4.8.3 FSS Gap Result Comparison . . . . .	45
4.8.4 Trade of Bandwidth and Gain . . . . .	45
4.8.5 Radiation Pattern Comparison . . . . .	46
<b>V CONCLUSION AND SUGGESTION</b>	<b>50</b>
5.1 Conclusion . . . . .	50
5.2 Suggestion . . . . .	50

