

K-BAND CHEBYSHEV PARALLEL-COUPLED BANDPASS FILTER

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**REDZUAN BIN MOHAMMAD
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGY MARA
40450 SHAH ALAM
SELANGOR DARUL EHSAN
MALAYSIA**

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ABSTRACT

The purpose of this project is to design, simulate and fabricate a microstrip Chebyshev bandpass filter. There would be two designs, which the ideal and designed filter, from these two, the designed were compared and justified whether it will suitable and operable in K-band frequency range. The bandpass filter should be operates in 21-21.3 GHz, which is 0.3 GHz in bandwidth. The filter would have 0.1 dB passband ripple, -30 dB attenuation at 22 GHz.

The microstrip antenna was designed and simulated using *GENESYS* and measured using Vector Network Analyzer (VNA). In this design, Rogers RT Duroid 5870 has been used as a substrate with 0.5 mm height, relative dielectric constant, $\epsilon_r = 2.33$ and dielectric loss tangent of 0.001. The measurement results doesn't give the expected result, however it give a good result that the microstrip properties tested in this design were not suitable for the frequency high as K-band range.

TABLE OF CONTENTS

CHAPTER		PAGE
	ACKNOWLEDGEMENTS	i
	ABSTRACT	ii
	TABLE OF CONTENTS	iii
	LIST OF FIGURES	v
	LIST OF TABLES	vi
	LIST OF ABBREVIATIONS	vii
1	INTRODUCTION	
	1.1 Fundamental of K-band Chebyshev bandpass filter	2
	1.2 Objective of the project	2
	1.3 Scope of the project	3
2	LITERATURE REVIEW	
	2.1 Introduction to microwave	5
	2.2 Circuit corresponding to high frequency	5
	2.2.1 Reflection coefficient definitions	5
	2.2.2 Return Loss	5
	2.2.3 Voltage Standing Wave Ratio	6
	2.3 S - Parameters	6
	2.4 Microwave frequencies	9
	2.5 Microstrip transmissions line theory	10
	2.5.1 Quasi-TEM Approximation	11
	2.5.2 Effective dielectric constant and characteristic impedances	11
	2.6 Computer Aided Design (CAD)	14

3 FILTER

3.1	Introduction	17
3.2	Basic Filter Theory	17
3.3	Parameters of Filters	20
3.3.1	Insertion Loss	20
3.3.2	Ripple	20
3.3.3	Bandwidth	21
3.3.4	Rejection	21
4.4	Various Filter Types	21
3.4.1	Lowpass filter	21
3.4.2	Highpass filter	22
3.4.3	Bandstop filter	22
3.4.4	Bandpass filter	22

4 DESIGN PROCEDURES

4.1	Introduction	25
4.2	Methodology	25
4.3	Bandpass Filter Design Procedures	28
4.4	Fabrication	35
4.5	Measurement	38

5 RESULTS AND DISCUSSIONS

5.1	Introduction	40
5.2	Simulations results	40
5.2.1	Result of ideal filter	41
5.2.2	Result of designed filter	42
5.3	Measurements results	44