

**DESIGN AND ANALYSIS OF SPLIT CYLINDER RESONATOR BY  
USING COMPUTER SIMULATION TECHNOLOGY (CST)**

**This project is presented in partial fulfillment for the award of the  
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## ABSTRACT

This project is commonly based on the dielectric sheet perturbation to the dominant  $TE_{111}$  mode resonant frequency of a circular cavity. The main objective of this project is to design and simulate a split cylinder resonator. The resonator is being modeled using CST Microwave Studio as unloaded and loaded cavities using fixed dimensions of radius  $a=25\text{mm}$  and height  $=65\text{mm}$ . It is simulated to analyze the value of  $TE_{111}$  mode resonance frequency and  $S_{21}$  parameter in both unloaded and loaded cavities. For loaded cavities, eleven samples of dielectric materials with different thickness have been simulated and the results show that each sample has its own permittivity at a certain frequency. The simulate results are then being compared with the measurement results which are obtained from previous work where good agreement are observed [1].

The objectives of this project involve having the knowledge and understanding in designing and simulating a split cylinder resonator and to compare simulation and measurement results for both unloaded and loaded cavities. Other than that, it also involves the view of electromagnetic field at various frequencies.

# TABLE OF CONTENTS

<b>DECLARATION</b>	<b>i</b>
<b>ACKNOWLEDGEMENT</b>	<b>ii</b>
<b>ABSTRACT</b>	<b>iii</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF FIGURES</b>	<b>vii</b>
<b>LIST OF TABLES</b>	<b>x</b>
<b>LIST OF ABBREVIATION</b>	<b>xi</b>
<b>CHAPTER</b>	<b>PAGE</b>
<b>1 INTRODUCTION</b>	
1.1 Microwave Technology	1
1.2 Microwave Application	2
1.3 Resonator	2
1.4 Workplan Outline	4
1.4.1 Literature Review	5
1.4.2 CST software	5
1.4.3 Design and simulation of a split cylinder resonator	5
1.4.4 Analyse conclusion and produce thesis	5
1.5 Thesis Outline	6
<b>2 LITERATURE REVIEW</b>	
2.1 Introduction	7
2.2 Introduction to CST Microwave Studio	8
2.2.1 CST Microwave Studio Key Features	10
2.2.2 Transient Simulator	11

2.2.3	Frequency Domain Simulator	11
2.2.4	Eigenmode Simulator	13
2.3	Type of Losses	14
2.3.1	Dielectric losses	14
2.3.2	Surface losses	15
2.4	Material Overview	15
2.5	Overview of the user interface structure	16
2.6	An Overview of the Basic Shapes Available	17
<b>3</b>	<b>THEORY</b>	
3.1	The Metallic Circular Cross Sectional Cavity	18
3.2	Transverse Mode	18
3.2.1	Transverse Magnetic (TM) Modes	19
3.2.2	Transverse Electric (TE) Modes	20
3.2.3	The Fundamental Mode	21
3.3	Dielectric Resonator	22
3.4	Electromagnetic Radiation	25
3.4.1	Electromagnetic spectrum	27
3.5	$Q$ of the $TE_{mnp}$ Mode	29
3.6	Dielectric Constant	31
<b>4</b>	<b>Modeling and Simulation</b>	
4.1	Methodology	32
4.1.1	General Description	32
4.1.2	Structure Generation	32
4.1.3	Solver Setup	32
4.1.4	Post Processing	33
4.2	Methodology Flow Chart	34
4.3	Design Procedure	35
4.3.1	Define the units	35
4.3.2	Define the Background Material	35