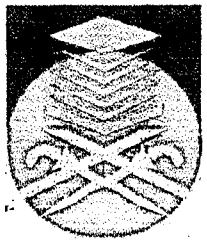
DESIGN OF MICROSTRIP BRANCH TRANSMISSION LINE FOR OPEN-CIRCUIT STUB

Thesis is presented in partial fulfillment for the award of the
Bachelor of Electrical Engineering (Honours)
UNIVERSITI TEKNOLOGI MARA



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ABSTRACT

The aim of this project to design of a 3 dB single section branch-line coupler. The branch-line coupler is designed to operate at 2 GHz. The initial circuit was designed and simulated on *HP Eesof Libra*.

This project report is organized into five chapters. Chapter 1 presents an overview of this final project. The types of branch-line coupler are explained in Chapter 2. Chapter 3 presents the design simulation and hardware implementation technique used in this final project. The measurement results are presented in Chapter 4. The discussion and conclusion of this final project will be presented in Chapter 5.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

To realize the miniaturization potential of solid stated devices, such as diodes, transistors etc, microstrip are required. Microstrip functions the same way as printed circuit boards (PCB). PCB can be used up to about a few hundred MHz only and in microwave frequencies the losses become so high and this makes their use impractical [7].

Basically a microstrip consists of a strip conductor and ground plane separated by a dielectric substrate materials as shown in figure 1.1. The top conductor strip, the dielectric substrate and conductor ground plane from a microwave transmission line. Microstrip has special dielectric substrate that confines the signal, hence less loss occurs. Microstrip can be used up to about 100 GHz using very thin quartz substrates.

This combination structure acts as a guide to the transmission of electromagnetic waves. The electrical properties of microstrip depend on strip width (W), strip thickness (t), and substrate thickness (h).