

“DESIGN AND IMPLEMENTATION OF DIRECTIONAL COUPLER USING RING- RESONATOR”

A Thesis submitted towards the partial fulfillment of the requirement for the
award of the degree of

**Master of Technology
In
Microwave and Optical Communication**

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CERTIFICATE

This is to certify that the thesis report entitled, "**Design and Implementation of Directional Coupler Using Ring-Resonator**" being submitted by **Sakshi Choudhary** to the *Department of Electronics and Communication Engineering and Applied Physics, Delhi Technological University, Delhi* in partial fulfillment of the requirement for award of Master of Technology degree in **Microwave and Optical Communication** is a record of bona fide work carried out by him under the supervision and guidance of **Dr. Priyanka Jain**. The matter embodied in this report has not been submitted for the award of any other degree.

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DECLARATION

I hereby declare that all the information in this document has been obtained and presented in accordance with academic rules and ethical conduct. This report is my own, unaided work. I have fully cited and referenced all material and results that are not original to this work. It is being submitted for the degree of Master of Technology in Engineering at the Delhi Technological University. It has not been submitted before for any degree or examination in any other university.

Signature:

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ABSTRACT

Directional Couplers and Power Dividers are the device used in the field of RF technology. Directional Coupler are used to couple a fixed amount of EM power in the transmission line so that that particular port can be used to feed the Electromagnetic power to a different circuit. And the important property of the directional coupler is that they couple power only in one direction.

Directional Couplers and power Dividers have so many applications including; to combine the feed from an antenna and to the antenna, sampling the signal so that it can be used for the measurement and monitoring, for filtering the frequency, providing taps for TV, and they are also used to separate the transmitted signal and received signal in the telecommunication.

In this project work I have studied about the different topologies for the design and implementation of the Directional Coupler. In my survey work I come to know about lots of techniques and I have tried to explain all the techniques. This project work explain the advantages and disadvantages of the presented techniques so that the designer can choose the techniques according to his requirements.

In this project I have selected the Ring-Resonator based technique and by using that technique I have designed and implemented a Directional Coupler for 2.4 GHz frequency.

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