# VHDL IMPLEMENTATION OF A LOW FREQUENCY LOW PASS IIR FILTER

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## ABSTRACT

Digital filters are taking over analog filters as the main choice to modify and shape signals. In implementing a digital filter, Computer Aided Design (CAD) tools are often used to simplify and ease the task. An IIR filter is designed using algorithms and is programmed using the VHDL language. Based on the design specification, careful choice of implementation method and tools can save a lot of time and work. Mentor Graphics software is an excellent tool to implement and simulate a digital filter. Thus, the filter can be analysed and redesigned based on the requirements and specification.

# TABLE OF CONTENTS

# CHAPTER 1

# INTRODUCTION

## 1.1 PROJECT OVERVIEW

Digital filters are overtaking analog filters as the choice for shaping and controlling a signal. This is due to the fact that digital filters are more flexible in their design and the cost of creating a digital filters goes down every 6 months. Digital filters are used in digital signal processors to create varying effects in terms of audio, pictures and movies. This can be seen with complex computer generated image, sound mixing and other use that utilizes the concept of a digital filter. In this research, a low pass IIR filter is designed with Mentor Graphics software. This filter is equivalent to a low pass Butterworth filter in analog form.

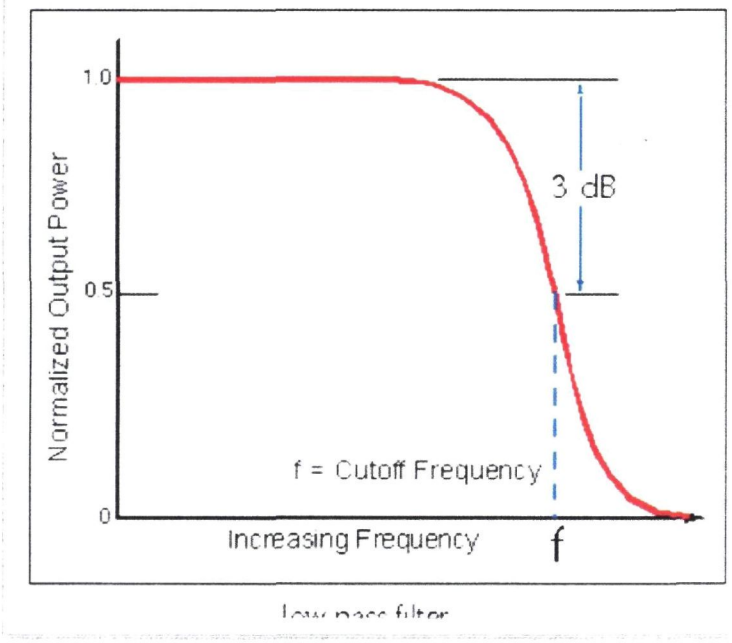


Figure 1 Low pass filter frequency response