Interference Cancellation in a Full duplex System

A DISSERTATION SUBMITTED TO

GOA UNIVERSITY

FOR THE DEGREE OF

MASTER OF SCIENCE

IN

ELECTRONICS

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DATE: 31- 07- 2020

CERTIFICATE

This is to certify that the project entitled

"**Interference Cancellation in a Full duplex System**"

Is a bonafide work done by

Mr. Uddesh F. Gawas , Mr. Harishchandra R. Mahale, &

Mr. Rohit M. Gurav

M.Sc. Part II (Electronics)

2019-2020

The candidates have worked on the project during the period of study under my guidance and to the best of my knowledge it has not previously formed the basis of award of any previous degree or diploma at Goa University.

HOD (Electronics)	**Examiner**	**Project Guide**

ACKNOWLEDGEMENT

Many hours of hard work and sincere efforts have gone into the accomplishment of this project. All of this would not have been possible without the timely support and supervision of certain people.

Firstly, we would like to thank the most significant being in our life and that is God Himself for providing us with the mental strength, courage, resolve and motivation to complete our project.

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Lastly, a big thanks to our parents for providing us with their support and financial help. Thanks to people who we might have forgotten to mention but have been instrumental in bringing this project to a fruitful conclusion.

DECLARATION

We hereby declare that, the thesis entitled "**Interference Cancellation in a Full duplex System"** submitted by us for the award of Degree of Master of Science in the faculty of Science of Goa University, Goa – India has been completed and written by us, has not previously formed the basis for the award of any Degree or Diploma or other similar title of this or any other University in India or any other country or examining body to the best of my knowledge.

M.Sc. (Electronics)

2019-2020

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Mr. Rohit M. Gurav	**Mr. Harishchandra R. Mahale**	**Mr. Uddesh F. Gawas**

Date: 31 - 07 - 2020

Place: Goa

ABSTRACT

Project Title: "SELF INTERFERENCE CANCELLATION IN A FULL DUPLEX SYSTEM "

Abstract-This paper presents the design and implementation of the In-band full duplex communication that can simultaneously transmit and receive on the same channel. The proposed scheme increases the amount of cancellable self-interference power by suppressing the distortion caused by the transmitter and receiver nonlinearities. In-band full-duplex has advantages over conventional duplexing schemes. A frequency division duplexing (FDD) system transmits and receives at the same time by using two different channels. Full duplexing increases the spectral efficiency by two times. We also propose novel air, analog and digital cancellation techniques that cancel the self-interference at receiver end, and therefore it guarantees that there is no degradation to the received signal. We have designed our simulation on air, analog and digital cancellation. Also show how our digital cancellation able to archive self-interference cancellation.

Keywords- In-band full duplex, Self-Interference Cancellation (SIC), Spectral efficiency, NLMS filter, Circulator.

TABLE OF CONTENTS

Page