شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

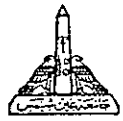
تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائـــــــق الاصليـــــة تالفـــة

بالرسالة صفحات لم ترد بالاصل



Ain Shams University

Faculty of Engineering
Electronic &Communication Engineering Department

Study and Investigation Of MOSFET IC FM Discriminator

by

Eng. \ SALAH MOHAMMED SAAFAN SHALABY
B.SC. Elec. Eng. Hon. (1994)

THESIS SUBMITTED FOR THE DEGREE OF
MASTER OF SCIENCE IN ELECTRONIC ENGINEERING

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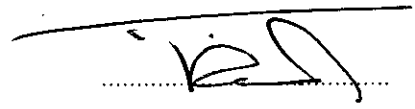

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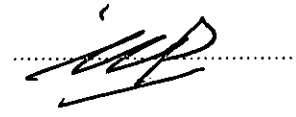

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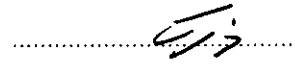

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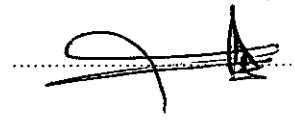

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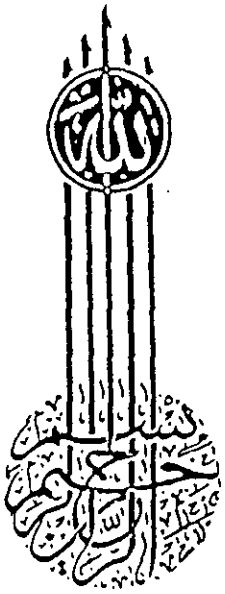

قَالُوا سُبْحَانَكَ لا عِلْمَ لَنَا إِلاَّ مَا
عَلَّمْتَنَا إِنَّكَ أَنتَ
الْعَلِيمُ الْحَكِيمُ

صدق الله العظيم
(سورة البقرة)
الآية «٣٢»

STATEMENT

This dissertation is submitted to Ain Shams University for the degree of Master of Science in Electrical Engineering.

The work included in this thesis was carried out by the auther in the Department of Communication & Electronic, Ain Shams University.

No part of the thesis has been submitted for a degree qualification at any other uneversity or institution.

Date : .....

Signature : Salah.....

Name : Salah Saafan

ABSTRACT

The detection of an FM signal should be linear over a sufficiently wide frequency range, and insensitive to amplitude variations of the incoming FM signal. There are several FM demodulators used to demodulate FM signals, namely:

the Slope detector, the Foster-Seely discriminator, the ratio detector, Quadrature detector, and PLL demodulator. In this work we present a novel circuit that can be used as an FM discriminator. The proposed FM detector consists of two loops:

The active loop which is sensitive to the FM signal to be demodulated, and the compensation loop, which is sensitive to the local oscillator frequency.

The first loop is constructed of:

Frequency Controlled Current Source (FCCS), and NMOSFET differential Amplifier.

The second loop is consists of:

Frequency Controlled Current Source (FCCS), and NMOSFET differential Amplifier.

The first and second loops are both monitored by a difference amplifier to cancel out the common mode signals from the main and compensation loops. This circuit is based on the frequency controlled current source (FCCS).

In this circuit, the average output voltage varies fairly linearly with varying frequency. When the frequency increases the average value of the output voltage increases. The proposed circuit functions as a frequency detector which is fairly linear over wide range of frequencies. Conventional FM discriminators can not be fully integrated because of the large capacitors and inductors involved in their implementation. In this thesis a development of a fully integrated FM discriminator is achieved. The overall system can be implemented in a single chip using VLSI technology.