AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
ELECTRONICS AND COMMUNICATIONS
ENGINEERING DEPARTMENT

MEASUREMENT OF LOW FREQUENCY NOISE IN SIMOX DEVICES

A THESIS SUBMITTED
FOR THE DEGREE OF
MASTER IN ELECTRONIC ENGINEERING
BY

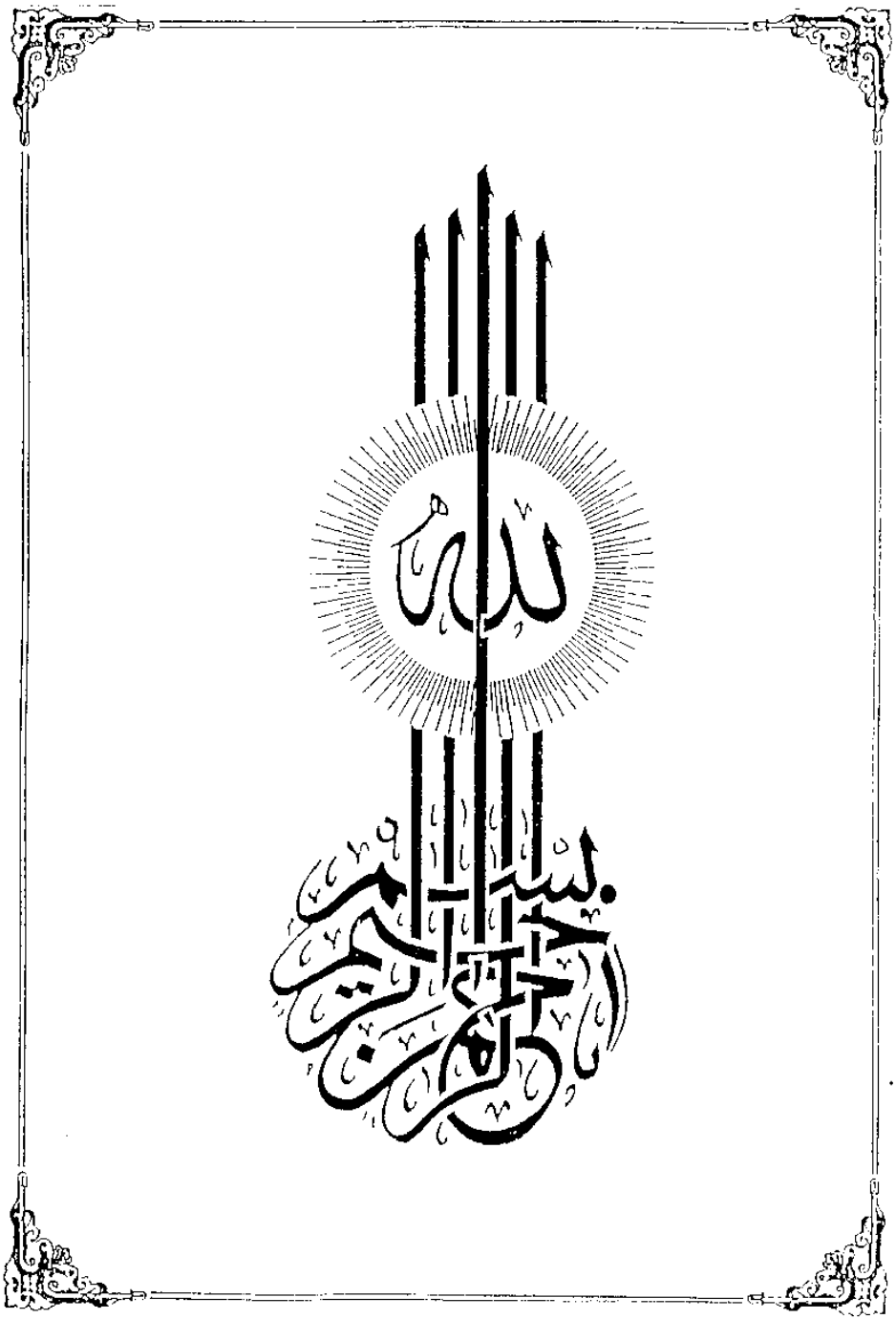
Engineer
NASSER MOHAMED ANIS EBRAHIM

UNDER THE SUPERVISION OF

Prof. Dr. MOHAMED KAMEL HASSAN ELSAID
Prof. and Chairman of the Electronics and Communication Engineering Dept., Faculty of Engineering Ain Shams University.

Dr. M. TAREK H. ELEWA
Ass. Prof. With the Electrical Eng. Dept.
Faculty of Engineering (Shoubra) Zagazig University

CAIRO 1996



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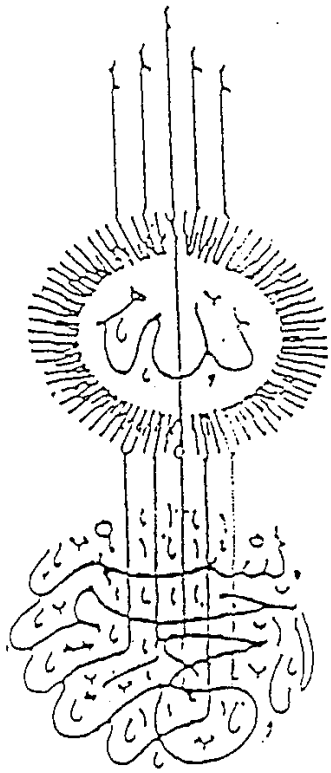

سبحانك

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صدق الله العظيم

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Thesis: Measarement of low Frequency Noise In SIMOX Devices

Degree: Master of Science In Electrical Engineering

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Date : 2/12/1996

ACKNOWLEDGMENTS

The author wishes to express his sincere appreciation and gratitude to **Prof. Dr. MOHAMED EL SAID** , for his supervision , instructive suggestion , useful comments and support .

The author would also acknowledge gratefully **Dr. MOHAMED TAREK H. ELEWA** for his helpful discussions , indispensable help , valuable guidance , valuable suggestions , and for supplying me with all available facilities and materials .

SUMMERY

Separation by implanted Oxygen (SIMOX) is the most widely used Silicon - On - Insulator (SOI) technology due to several reasons ; the most important of which is the capability of three dimensional integration and the ease of fabrication as well as the relatively good quality of the insulating material itself (i.e. SiO_2) .

The research work described in this thesis is devoted to measure noise in SIMOX MOSFET's (low frequency) .

The thesis contains three chapters . The first chapter contains a brief about the different kinds of noise . It demonstrates the effect of noise in low frequency of MOS and SIMOX transistors .

The second chapter gives a review about the SOI technologies . The advantages and draw backs of various SOI materials are outlined. The front runner amongst them is seem to be SIMOX , and it gives a brief review on SIMOX where transistors different contribution of the principle and parasitic transistors were described .

The third chapter discusses practical part which is composed of the following items :

- A set up was built to measure I - V characteristic curves by using automatic measurements to measure and to detect the threshold voltage on MOS and SIMOX transistors.

- A set up to measure the high frequency noise in resistors manually and then to develop the set up to perform the mesurements automatically .

- A set up to measure the low frequency noise in MOS and SIMOX transistors manually and automatically .

Finally , a discussion and an analysis of the measured results was introduced.

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