STUDY OF CHANNEL ESTIMATION AND FREQUENCY STEP IN OFDM SYSTEMS WITH APPLICATION ON DVB-T2

By

Mahmoud Esam Mohamed Ahmed Abdelgelil

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
ELECTRONICS AND ELECTRICAL COMMUNICATION ENGINEERING

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Under the Supervision of

Hanan Ahmed Kamal

Professor
Electronics and Electrical
Communications Engineering Department
Faculty of Engineering, Cairo University

Ahmed Farouk Shalash

Professor
Electronics and Electrical
Communications Engineering Department
Faculty of Engineering, Cairo University

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Approved by the
Examining Committee

Hanan Ahmed Kamal Professor, Faculty of Engineering, Cairo University	Principal Advisor
Ahmed Farouk Shalash Professor, Faculty of Engineering, Cairo University	Advisor
Shawky zaki Eid Professor, Faculty of Engineering, Cairo University	Member
El sayed mostafa saad Professor, Faculty of Engineering, Helwan University	Member

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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2014

Engineer's Name:	Mahmoud Esam Mohamed Ahmed Abdelgelil
Date of Birth:	19/08/1989
Nationality:	Egyptian
E-mail:	Eng.mahmoud.esam@hotmail.com
Phone:	01007823322

Registration Date:	1/10/2011
Awarding Date:	…/…/…
Degree:	Master of Science
Department:	Electronics and Electrical Communication Engineering

Supervisors:

Prof. Hanan Ahmed Kamal
Prof. Ahmed Farouk Shalash

Examiners:

Prof. Hanan Ahmed Kamal
Prof. Ahmed Farouk Shalash
Prof. Shawky zaki Eid
Prof. Elsayed mostafa saad

Title of Thesis: Study of channel estimation and frequency step in OFDM systems with application on DVB-T2

Key Words: Kalman filter, Automatic Gain Control, Channel estimation, OFDM

Summary:

This work proposes a new technique for solving the problem of the tracking of the frequency step of the oscillators. This work proposed a change on the Kalman filter where its bandwidth will change non-linearly to enhance the performance of the filter.

In addition to the Frequency jump detection, another proposed technique is used here to enhance the AGC performance. To enhance its performance with low specifications, a non-linear feedback from the channel estimation is used. The ordinary channel estimations and Kalman filter have been used to detect this fast fades.

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