



Cairo University

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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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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Contents

Acknowledgment	v
Abstract	vi
List of Tables	x
List of Figures	xvi
List of Symbols and Abbreviations	xix
1 Introduction	1
1.1 OFDM system	1
1.1.1 Problems in OFDM System	2
1.1.2 OFDM system Transmitter	3
1.2 OFDM Receiver	9
1.3 Problems Concerned in the thesis	11
1.3.1 Frequency step estimation in The carrier oscillator	11
1.3.2 Boosting AGC performace with a Feedback from the Channel estimation	13
2 Literature Survey	15
2.1 Frequency step in Oscillator	15
2.1.1 Kalman Filter Detection	19
2.2 Channel Estimation	22
2.2.1 Maximum pilot distance	24
2.2.1.1 Sampling In Frequency Domain	24
2.2.1.2 Sampling in time direction	25
2.2.2 Channel estimation techniques	26
2.2.2.1 Least square in block type	26
2.2.2.2 Least square	27

2.2.2.3	Wiener Filter	29
2.3	Automatic Gain Control and The abrupt changes in the channel . .	33
2.3.1	Traditional AGC	33
2.3.2	Data Aided AGC	34
2.3.3	Joint AGC-Equalization	34
2.3.4	Abrupt changed detection using Kalman filter	36
2.4	Frame construction in DVB-T2	38
3	Frequency Jump Detection In Oscillators Using Kalman Filter With Non-Linear change	40
3.1	Overview	40
3.2	Proposed solution	41
3.3	Modifying The Bandwidth To a higher value Instantly	44
3.4	Increasing The Bandwidth to a Constant One	54
3.5	Modifying The Bandwidth With a Gradual Increase	63
3.6	Modifying The Bandwidth with High Value then Decrement Gradually	73
3.7	Comparison Between Different Bandwidth Modifications	81
4	Boosting Automatic Gain Control Performance With channel estimation Feedback	83
4.1	Overview	83
4.2	Non linear change in the AGC	84
4.2.1	Step Detection Using Frequency Estimation	85
4.2.2	Step Detection Using Kalman Filter	91
4.3	Simulation Results	94
4.3.1	Using Generic OFDM system	94
4.3.1.1	ordinary channel estimation	94
4.3.1.2	Kalman filter	100
4.3.2	Simulation Results on DVB-T2 System	101
4.3.2.1	Using Ordinary Frequency channel estimation techniques	110
4.3.2.2	Using Kalman filter	119
5	Conclusion	131
	List of Publications	133

List of Tables

2.1	number of P2 symbols for each FFT size	38
2.2	Places of different pilots' types in different OFDM symbols . . .	38
2.3	Parameters defining the scattered pilots	39
3.1	The tracking values for the false alarms using the Modified Kalman filter with the first method and different thresholds	47
3.2	The settling time using the first way	47
3.3	The settling time using the second way	56
3.4	The tracked and the real values for the false alarms using the second way	57
3.5	The settling time using the third way	68
3.6	The tracked and the real values for the false alarms using the third way	68

List of Figures

1.1	Frequency domain signal	2
1.2	Two transmitted symbol in a single tap channel	3
1.3	The effect of Multipath channel on the signal	4
1.4	The Guard impulse insertion between symbols	4
1.5	Multipath effect in the presence of guard interval	5
1.6	ICI problem due to multipath effect	5
1.7	ICI solution due to the insertion of Cyclic Prefix	6
1.8	Generic OFDM Transmitter system	7
1.9	8-PSK modulation scheme	8
1.10	16 QAM modulation scheme	8
1.11	Comb type pilot pattern	9
1.12	Block type pilot pattern	10
1.13	Generic OFDM Receiver	12
2.1	The Analog Sensor Used to Detect the Frequecy of the Used Os- cillator	16
2.2	The ideal output of the sensor when a frequency jump is happened	17
2.3	Kalman filter response	23
2.4	The System level For AGC	35
2.5	Data Aided AGC	35
2.6	Joint AGC-Equalizer in [1]	36
3.1	Performance of Bandwidth with Kalman filter gain	43
3.2	Flow graph for the method of sudden change	45
3.3	The process covariance changes in the second way	46
3.4	Output of sudden change method	48
3.5	False tracking when the threshold is decreased	48
3.6	False tracking when the threshold is increased	49
3.7	Output due to sudden bandwidth change with low Q	49

3.8	Flow chart for the constant change of the Bandwidth of the Kalman filter	55
3.9	The process covariance changes in the second way	56
3.10	Output of Kalman filter with a constant change in bandwidth . . .	57
3.11	Output of Kalman filter with a constant change in bandwidth with low threshold	58
3.12	Output of Kalman filter with a constant change in bandwidth with high threshold	58
3.13	Output of Kalman filter with a constant change in bandwidth with higher changeable bandwidth	59
3.14	Flow chart for the incremental increase in bandwidth of Kalman filter	64
3.15	Figure to illustrate how the process covariance changes in the second way	65
3.16	Output of the Kalman filter with incremental Bandwidth change .	66
3.17	Output of the Kalman filter with incremental Bandwidth change with low threshold	66
3.18	Output of the Kalman filter with incremental Bandwidth change with high threshold	67
3.19	Output of the Kalman filter with incremental Bandwidth change with higher change	67
3.20	Flow chart for the sudden then decremental bandwidth of the Kalman filter	74
3.21	Figure to illustrate how the process covariance changes in the second way	74
3.22	output of Kalman filter with decremental bandwidth change	75
3.23	output of Kalman filter with decremental bandwidth change with low threshold	76
3.24	output of Kalman filter with decremental bandwidth change with high threshold	76
4.1	The AGC Topology After Modification by inserting another block for the gain factor which is fed-back from the Channel estimation	86
4.2	AGC and channel estimation feedback	87
4.3	MSE for different Channel estimation techniques	91
4.4	Feedback using Kalman filter	92

4.5	BER curves using the proposed algorithm and without in a single tap channel with least square estimation and BPSK modulation . .	96
4.6	BER curves using the proposed algorithm and without in a single tap channel with weiner filter estimation and BPSK modulation . .	96
4.7	BER curves using the proposed algorithm and without in a single tap channel with least square estimation and 8-PSK modulation . .	97
4.8	BER curves using the proposed algorithm and without in a single tap channel with weiner filter estimation and 8-PSK modulation .	97
4.9	BER curves using the proposed algorithm and without in a Multi taps channel with least square estimation and BPSK modulation .	98
4.10	BER curves using the proposed algorithm and without in a Multi taps channel with weiner filter estimation and BPSK modulation .	98
4.11	BER curves using the proposed algorithm and without in a Multi taps channel with least square estimation and 8-PSK modulation .	99
4.12	BER curves using the proposed algorithm and without in a Multi taps channel with weiner estimation and 8-PSK modulation . . .	99
4.13	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with least square estimation and BPSK modulation	101
4.14	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with different delays with least square estimation and BPSK modulation	102
4.15	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with weiner filter estimation and BPSK modulation	102
4.16	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with different delays with weiner filter estimation and BPSK modulation	103
4.17	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with weiner filter estimation and 8-PSK modulation	103
4.18	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with different delays with least square estimation and 8-PSK modulation	104
4.19	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with weiner filter estimation and 8-PSK modulation	104

4.20	BER curves using the proposed algorithm and without in a single tap channel using Kalman filter with different delays with weiner filter estimation and 8-PSK modulation	105
4.21	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with least square estimation and BPSK modulation	105
4.22	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with different delays with least square estimation and BPSK modulation	106
4.23	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with wiener filter estimation and BPSK modulation	106
4.24	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with different delays with weiner filter estimation and BPSK modulation	107
4.25	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with least square estimation and 8-PSK modulation	107
4.26	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with different delays with least square estimation and 8-PSK modulation	108
4.27	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with weiner filter estimation and 8-PSK modulation	108
4.28	BER curves using the proposed algorithm and without in a multi taps channel using Kalman filter with different delays with weiner filter estimation and 8-PSK modulation	109
4.29	BER curves for the proposed method using least square with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on QPSK system .	111
4.30	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on QPSK system .	112
4.31	BER curves for the proposed method using least square with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on 16 QAM system	112
4.32	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on 16 QAM system	113
4.33	BER curves for the proposed method using least square with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on 64 QAM system	113

4.34	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on 64 QAM system	114
4.35	BER curves for the proposed method using least square with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on QPSK system	116
4.36	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on QPSK system	116
4.37	BER curves for the proposed method using least square with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on 16 QAM system	117
4.38	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on 16 QAM system	117
4.39	BER curves for the proposed method using least square with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on 64 QAM system	118
4.40	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP2 and GI equals to $0.125T_s$ on 64 QAM system	118
4.41	BER curves for the proposed method using least square with 2K OFDM size with PP1 and GI equals to $0.25T_s$ on QPSK system	120
4.42	BER curves for the proposed method using Wiener filter with 1K OFDM size with PP1 and GI equals to $0.25T_s$ on QPSK system	120
4.43	BER curves for the proposed method using least square with 2K OFDM size with PP1 and GI equals to $0.25T_s$ on 16 QAM system	121
4.44	BER curves for the proposed method using Wiener filter with 2K OFDM size with PP1 and GI equals to $0.25T_s$ on 16 QAM system	121
4.45	BER curves for the proposed method using least square with 2K OFDM size with PP1 and GI equals to $0.25T_s$ on 64 QAM system	122
4.46	BER curves for the proposed method using Wiener filter with 2K OFDM size with PP1 and GI equals to $0.25T_s$ on 64 QAM system	122
4.47	Kalman filter with large bandwidth on PP1, first GI and FFT 1K with QPSK	124
4.48	Kalman filter with large bandwidth on PP1, first GI and FFT 1K with 16QAM	124
4.49	Kalman filter with large bandwidth on PP1, first GI and FFT 1K with 64QAM	125
4.50	Difference between different Kalman filters with different band- widths on PP1, first GI and FFT 1K with QPSK	125
4.51	Difference between different Kalman filters with different band- widths on PP1, first GI and FFT 1K with 16 QAM	126

4.52	Difference between different Kalman filters with different bandwidths on PP1, first GI and FFT 1K with 64 QAM	126
4.53	Kalman filter with large bandwidth on PP2, second GI and FFT 1K with QPSK	128
4.54	Kalman filter with large bandwidth on PP2, second GI and FFT 1K with 16QAM	128
4.55	Kalman filter with large bandwidth on PP2, second GI and FFT 1K with 64QAM	129
4.56	Difference between different Kalman filters with different bandwidths on PP2, second GI and FFT 1K with QPSK	129
4.57	Difference between different Kalman filters with different bandwidths on PP2, second GI and FFT 1K with 16 QAM	130
4.58	Difference between different Kalman filters with different bandwidths on PP2, second GI and FFT 1K with 64 QAM	130