

آية

قال تعالى : {قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ الَّذِينَ لَا يَعْلَمُونَ
إِنَّمَا يَتَذَكَّرُ أُولُو الْأَلْبَابِ} [الزمر : 9]

To my parents, lovely Dad & Mom

"Taj Elser & Hayat"

To my lovely brothers, sister

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ABSTRACT

In this thesis, the impact of clipping noise on Visible light communication systems employing asymmetrically clipped optical OFDM in the presence of double-sided signal clipping is investigated. MATLAB program was used to the BER performance. The simulation compared two cases where the clipping noise is ignored and where it is present for multi-level quadrature amplitude modulation (M -QAM) schemes. The results showed that BER performance of ACO-OFDM based VLC is more severely degraded with the increase of the modulation order And the ACO-OFDM is robust to the clipping effects and it is more suitable for applications with lower radiated average optical power and zero biasing.

المستخلص

في هذه الأطروحة، تمت دراسة تأثير ضوضاء القطع على أنظمة الاتصالات الضوئية المتمثلة في القطع الغير متمائل للتقنية تقسيم الترددات المتعامدة الضوئي في وجود القطع ذو الوجهين للإشارة. تم اسخدام برنامج الماتلاب لدراسة اداء معدل الخطأ في البتات. في المحاكاة تمت مقارنة حالتين في حالة وجود ضوضاء قطع وفي حالة تجاهل ضوضاء القطع للتضمين السعوي الرباعي متعدد المستويات. أظهرت النتائج أن معدل الخطأ في البتات في القطع الغير متمائل للتقنية تقسيم الترددات المتعامدة الضوئي يتدرج بزيادة قيمة التضمين وأن القطع الغير متمائل للتقنية تقسيم الترددات المتعامدة ممانع لتأثير القطع وهو أكثر ثباتاً للتطبيقات معدل الاشعاع الضوئي المنخفض و تحامل صفري

Table of Contents

Content	Page
Dedication	II
Acknowledgment	III
Abstract	IV
Contents	VI
List of Figures	VIII
List of Tables	XI
Abbreviations	XIV
 Chapter One: Introduction	
1.1 Preface	2
1.2 Problem Statement	3
1.3 Objectives	4
1.4 Methodology	4
1.5 Thesis Outlines	4
 Chapter Two: Literature Review	
2.1 Introduction	6
2.2 Historical Background	7
2.3 Literature review	8
2.4 Comparison of VLC with Other Communication Technologies	9
2.4.1 VLC versus Radio Waves	9
2.4.2 VLC versus Infrared Communication	10
2.5 VLC for Indoor Communication	11

2. 6 VLC Applications	12
2.7 Basic VLC System structure	14
2.6.1 Intensity Modulation and Direct Detection	15
2.6.2 White LEDs	15
2.6.4 Photodiodes	16
2.6.3 VLC Modulation Techniques	17
 Chapter Three: Methodology	
3.1 Introduction	22
3.2 ACO-OFDM system model	22
 Chapter Four: The Simulation and Results	
4.1 Introduction	38
4.2 System assumptions	38
4.3Simulationflowcharts	39
4.4 Results and discussion	40
 Chapter Five: Conclusion & Recommendation	
5.1 Conclusion	52
5.2 Recommendation	53
 Reference	 54
 Appendix	

List of Figures

Figure	Page
Figure 2.1: The visible spectrum	11
Figure 2.2: Car-to-car visible light communication between head and tail	12
Figure 2.3: VLC in an aircraft cabin	13
Figure 2.4: Medical equipment sensitive to radio wakes can work with VLC	13
Figure 2.5: VLC in underwater communications	14
Figure 2.6: The basic structure of VLC system	14
Figure 2.7: Trichromatic white LEDs, Single-chip white LEDs.	16
Figure 2.8: Chromacity diagram for CSK	18
Figure 3.1 Block diagram of the ACO-OFDM based VLC system.	24
Figure 3.2: Attenuation factor of the clipping noise as a function of the normalized clipping levels in ACO-OFDM	33
Figure 3.3: Time domain signal in DSP, $x_{\text{DSP}}(k)$, in ACO-OFDM	34
Figure 3.4: Unfolded time domain signal in DSP, $\tilde{x}_{\text{DSP}}(k)$, in ACO-OFDM	35
Figure 4.1: ACO-OFDM Flow Chart	39
Figure 4.2: BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with 4-QAM modulation and no clipping noise	41
Figure 4.3: BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with 16-QAM modulation and no clipping noise	42
Figure 4.4: BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with 64-QAM modulation and no clipping noise	43
Figure 4.5: BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with different biasing power and no clipping noise	44
Figure 4.6 BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with different power transmitted and zero biasing, no clipping noise	45
Figure 4.8: BER versus SNR ($\Gamma_{\text{b(elec)}}$), for ACO-OFDM with 4QAM modulation and with clipping noise	46

Figure 4.9: BER versus SNR ($\Gamma_{b(elec)}$), for ACO-OFDM with 16-QAM modulation and with clipping noise	47
Figure 4.10: BER versus SNR ($\Gamma_{b(elec)}$), for ACO-OFDM with 64QAM modulation and with clipping noise	48
Figure 4.11: BER versus SNR ($\Gamma_{b(elec)}$), for ACO-OFDM with different biasing power and with clipping noise	49
Figure 4.12 BER versus SNR ($\Gamma_{b(elec)}$), for ACO-OFDM with different power transmitted ,zero biasing and with clipping noise	50

List of Tables

Figure	Page
Table4.1: Simulation Parameter	38

Abbreviations

ACO-OFDM	Asymmetrically Clipped Optical OFDM
APDs	Avalanche photo-diodes
AWGN	Additive White Gaussian Noise
BER	Bit Error Rate
CCDF	Complementary cumulative distribution function
CP	Cyclic prefix
CSK	Color Shift Keying
DCO-OFDM	DC Biased Optical OFDM
DD	Direct Detection
FOV	Field-of-view
FFT	Fast Fourier Transform
ICI	Inter carrier interference
IFFT	Inverse Fast Fourier Transform
IM	Intensity Modulation
LED	Light Emitting Diode
LOS	Line of Sight
OFDM	Orthogonal Frequency Division Multiplexing
OWC	Optical Wireless Communication
SSL	solid-state lighting
SNR	Signal to Noise Ratio
VLC	Visible Light Communication
VLCC	Visible light communications consortium
ZF	Zero forcing equalizer

