آية

قال تعالى : {قُلْ هَلْ يَسْتَوِي الَّذِينَيَعْلَمُونَالَّذِينَ لا يَعْلَمُونَ إِنَّمَا يَتَذَكَّرُ أُولُو الأَلْبَاب} [الزمر : 9]

To my parents, lovely Dad & Mom

"Taj Elser & Hayat"

To my lovely brothers, sister

Acknowledgment

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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 الاطروحة,تمت دراسة تأثير ضوضاء القطع على انظمة الاتصالات الضوئية المتمثلة في القطع الغيرمتماثل للتقنية تقسيم الترددات المتعامدة الضوئي في وجود القطع ذو الوجهين للاشارة. تم اسنخدام 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 الغيرمتماثل للتقنية تقسيم الترددات المتعامدة الضوئي يتدرج بزيادة قيمة التضمين وأن القطع الغيرمتماثل للتقنية تقسيم الترددات المتعامدة ممانع لتأثير القطع وهو اكثر ثباتا للتطبيقات معدل الاشعاع الضوئي المنحفض و تحامل صفري

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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