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APPROVAL AND DECLARATION SHEET

This project report titled Development of New OCDMA Code was prepared and submitted by Nor Ilyana Bt Osman (Matrix Number : 031080714) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Communication Engineering) in Universiti Malaysia Perlis (UniMAP).

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PEMBENTUKAN KOD ‘OCDMA’ BARU

ABSTRAK

Komunikasi merupakan perkara yang penting pada masa sekarang tidak kira masa, tempat dan situasi. Medium penghantaran isyarat boleh dikelaskan kepada tanpa wayar dan berwayar (terutamanya gentian optik di mana ianya mempunyai kelebihan dari segi penghantaran jarak jauh berbanding dengan medium penghantaran yang lain). Tambahan pula terdapat tiga jenis akses pelbagai bahagian yang digunakan di dalam sistem komunikasi iaitu Akses Pelbagai Bahagian Masa (TDMA), Akses Pelbagai Bahagian Jarak Gelombang (WDMA) dan Akses Pelbagai Bahagian Kod (CDMA). CDMA diakui dapat menyediakan tahap kecekapan, keselamatan dan kelebihan pelbagai akses di dalam dunia komunikasi tanpa wayar. Akses Pelbagai Bahagian Kod Optik (OCDMA) merupakan topik menarik untuk dibuat kajian kerana ianya berpotensi untuk menyokong ledakan komunikasi tanpa segerak. Perlaksanaan mana-mana sistem OCDMA adalah bergantung kepada ciri-ciri kod. Pembangunan aplikasi kod ini perlu dipertingkatkan untuk mendapatkan tahap penghantaran isyarat yang optimum di dalam sistem OCDMA.

ABSTRACT

Nowadays, communication is very important at any place, time and situation. The transmission of signal can be in wireless or cable (especially fiber optic that has more advantages than others cable for a long distance). Furthermore, there are three type of division multiple accesses that use in communication systems which are Time Division Multiple Access (TDMA), Wavelength Division Multiple Access (WDMA) and Code Division Multiple Access (CDMA). But, CDMA has been recognized to provide efficiency, security, and multi-access benefits in wireless communications. This has triggered interest in providing similar advantages for optical communication systems. Optical code division multiple access (OCDMA) is an interesting subject of research because of its potential to support asynchronous, burst communications. The performance of any OCDMA system strongly depends on the codes properties. The application of codes had been develop need to be improved to get the good transmission performance in OCDMA system.

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ΔF	chip width
Δv	total spectral width
B	electrical equivalent noise band-width of the receiver
e	electron charge
k	number of user
k_B	Boltzmann's constant
N, C	code length
P_{sr}	effective power at receiver
R	photodiode responsivity
R_L	load resistance
T_r	temperature of receiver noise
w	code weight
BER	Bit Error Rate
DW	Double Weight
MAI	Multiple Access Interference
MDW	Modified Double Weight
OCDMA	Optical Code Division Multiple Access
PIIN	Phase Intensity Induced Noise
SNR	Signal-to-Noise Ratio
TDMA	Time Division Multiple Access
WDMA	Wavelength Division Multiple Access
ZCC	Zero Cross Correlation