



INVENTORS

IR. DR. ANUAR MAT SAFAR
PROF. DR. SYED ALWEE ALJUNID SYED JUNID
DR. AMIR RAZIF ARIEF JAMIL ABDULLAH
DR. HASSAN YOUSIF
MR. MOHD RASHIDI CHE BESON
MR. ABDUL RAHMAN KRAM
MR. ABDULLAH OMAR ALI AL-DHAIBANI
DR. JUNITA MOHD NORDIN
MSS SITI FATIMAH HARUH

CONTACT DETAILS

Centre of Excellence Advanced Communication
Engineering School of Computer
and Communication Engineering
(CoE ACE-SCCE),
Universiti Malaysia Perlis (UniMAP)
e-mail: anem@unimap.edu.my

ZCC-OCDMA CODE FOR SYMMETRIC FIBER-TO-THE-HOME IN ACCESS NETWORK

Copyright Reg. No. : 340383



* Collaboration with:



PRODUCT DESCRIPTIONS

A new Zero Cross Correlation (ZCC) code has been developed and applied in Gigabit Symmetric FTTH to carry triple play services. This system is designed to accommodate high number of users and inherent security of data transmission compare to the existing TDMA or WDMA system. The code has been design in such a way to reduce Multiple Access Interference (MAI) among users. This code demonstrates a better performance compare to existing coding systems.

COMMERCIALIZATION POTENTIALITIES

- A new ZCC-OCDMA coding system has a great potential to become part of optical communication transceiver system for OCDMA implemented in various applications such as FTTH, Triple play, Automotive and Oil and Gas industry.

NOVELTIES

- New ZCC OCDMA code with zero cross-correlation property.
New OCDMA encoder-decoder.
Newly proposed receiver design using direct-detection technique.

INVENTION ADVANTAGES

- ZCC coding system with simple code construction accommodates high cardinality (number of users). The system has zero cross correlation between users result in suppression of MAI.
Cost reduction by using direct-detection technique.
Utilizing low cost broadband source and detector will economically reduce the cost of end users.
Compliance to Restriction of Hazardous Substances directive (RoHS).
Environmental friendliness: - Optical-reduce radiation (renewable).

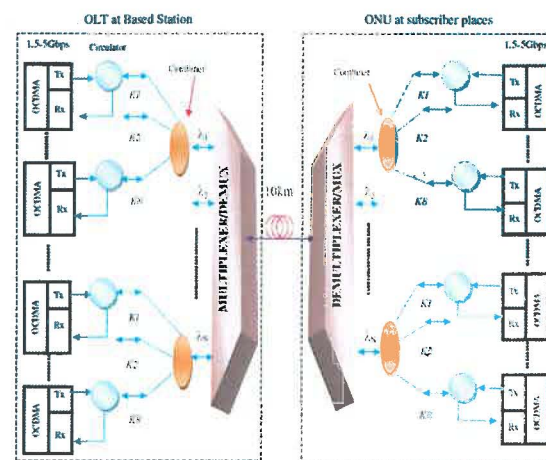


Fig. 1: ZCC-OCDMA Symmetric Prototype Setup

Table showing transformation process of weight and users for weight=1, 2, and 3.

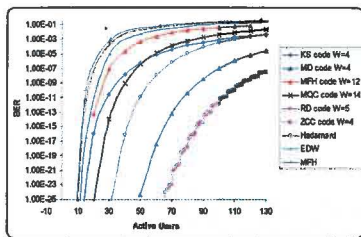


Fig. 3: BER Performance for Different OCDMA Code.

Fig. 2: Transformation Process of Weight and Users.

APPLICATIONS



Fig. 4: Oil and Gas Application.

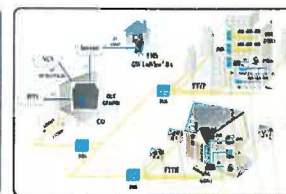


Fig. 6: Fiber-to-the-Home Application.



Fig. 5: Automotive Application.



Fig. 7: Triple-Play Application.

PUBLICATIONS
Anuar, M. S., Aljunid, S. A., Saad, N. M., & Hamzah, S. M. (2009). New design of spectral amplitude coding in OCDMA with zero cross-correlation. Optics Communications, 282(14), 2659-2664. (IF=1.438).
Anuar, M. S., S. A. Aljunid, A. R. Arief, Junita, N., N. Saad (2012). Minimizing correlation effect using zero cross correlation code in spectral amplitude coding optical code division multiple access. Optical Review, 19(1), 20-24. (IF=0.702)