

01-Apr-2020

Dear Prof. Tseng:

Your manuscript entitled "Multiple access techniques for bipolar optical code division in wireless optical communications" has been accepted for publication in IEEE Access. The comments of the reviewers who reviewed your manuscript are included at the foot of this letter. We ask that you make changes to your manuscript based on those comments, before uploading final files.

However, NO CHANGES to the author list or the references will be permitted.

Finally, please improve the English grammar and check spelling, as it is only lightly edited before publication.

Once you have updated your article accordingly, please send all final versions of your files through the "Awaiting Final Files" queue in your Author Center on ScholarOne Manuscripts. Once you have completed the submission of your final files you will not be able to make changes until you have received your page proofs from IEEE.

Please submit all of the following in the list below and note that all files intended for publication need to be uploaded during this step, even if some files are unchanged from your previous submission (including multimedia videos). If all files are not submitted with final files, it will delay the publication of your article, or result in certain files not being published.

- 1) Manuscript in MS Word or LaTeX.
- 2) A PDF of the final manuscript in double column, single-spaced format named "FINAL Article.pdf". If not used already, templates can be found at: <http://ieeauthorcenter.ieee.org/?s=IEEE+Access+templates>
- 3) Biographies and author photos in MS Word.
- 4) Figures/photos saved as separate PDF, Word, .eps, .ps, or .tiff files (if not embedded in the source file)
- 5) A Graphical Abstract (GA) which provides a concise, visual summary of the findings of your article. The GA should be a figure, image, or multimedia video from the accepted article. If you submitted a video with your article submission, this will automatically become the GA, and a still image will be required to act as an overlay. As a reminder, you must submit the video again with your final files or it will not be published with your article. For more information on the GA, please go to: <http://ieeaccess.ieee.org/submitting-an-article/#GraphicalAbstracts>
- 6) A Word file that indicates: a) the file name(s) of the GA and overlay (if applicable), b) a caption for the GA that should not exceed 60 words.

Copyright Information / APC instructions:

After you submit final files, you will automatically be directed to the Electronic Copyright Form. Once the copyright information is completed, within a few business days, you will receive an email from Copyright Clearance Center (CCC) to log into their payment portal site and settle your balance by check, credit card, or wire transfer. If you need assistance with the site or payment process, please contact CCC Customer Service at: IEEESupport@copyright.com.

Thank you for your fine contribution. On behalf of the Editors of IEEE Access, we look forward to your continued contributions to IEEE Access.

Sincerely,
Dr. Tariq Umer
Associate Editor, IEEE Access
t_umer@yahoo.com, tariqumer@cuilahore.edu.pk

Reviewer(s)' Comments to Author:

Reviewer: 1

Recommendation: Accept (minor edits)

Comments:

The paper presents an optical wireless communication system using bipolar OCDMA codes. Authors have covered most area of the design and implementation; however, they need to focus on some afore mentioned minor details.

Additional Questions:

Does the paper contribute to the body of knowledge?: Yes the paper contributes to the body of knowledge by providing a relatively new approach for the experimental implementation of OCDMA based system for OWC.

The results however, are not that encouraging, but the approach can open new doors for research in this area.

Is the paper technically sound?: The paper cover most aspects of the OCDMA based optical wireless communication systems.

However, the authors need to further justify the use for bipolar coding scheme. Moreover, the proof of bipolar decoder in Fig. 2 needs to be elaborated further for a clear understanding.

The authors also have not mentioned the parameters for the optical wireless channel that can also affect overall performance of the system.

Use of MZM can yield better results as per the available literature.

How is the proposed code better than the existing codes?

Is the subject matter presented in a comprehensive manner?: Yes the subject matter is presented in a comprehensive manner.

Are the references provided applicable and sufficient?: Most of the reference provided are from the previous decade. The authors must use some updated reference for their work.

Reviewer: 2

Recommendation: Accept (minor edits)

Comments:

This paper designs a bipolar coding method for optical code division multiple access used

in are in wireless optical communications. The method is optical signals with horizontal or vertical polarization state can be controlled using bipolar data. In this manuscript, experiments were conducted on two devices to determine the feasibility of using multiple access techniques for bipolar optical code division in free-space optical communication. In the first architecture, each user operates a mechanical optical switch by switching data bits to generate optical signals with specific polarization states into a free-space channel through a collimator. And then, the decoded signals were sent to a balanced photodetector, which can reconstruct original data from the encoder. The second experiment involved using an encoder with an erbiumdoped fiber amplifier and a decoder with an attenuator to improve system stability. The third experiment was designed to verify that multiple access interference could be alleviated. The last experiment, an ultra-fast optical switch was used instead of the original optical switch for selecting optical signals with a specific polarization state to improve the overall transmission rate. The paper is interesting and has a value in OCDMA applications. However, there are several comments need to be addressed as following.

1. There are several experiments in the paper, authors should clear explain why the experiment setups are modified in different kinds of situations and also make a conclusion between them.
2. The quality of Fig. 8 is not good; it should be redrawing.
3. The element of fiber Bragg grating is sensitive of temperature and stress, the discussions about them should be addressed.
4. Finally, the contributions in the study are polarization and bipolar coding schemes, the related references should be added as following.
 - a. Constructing a two bands optical code-division multiple-access network of bipolar optical access codecs using Walsh-coded liquid crystal modulators.
 - b. Optical CDMA Embedded with a Polarization Diversity Scheme for RoF Transmission.
 - c. A Study of Dispersion Compensation of Polarization Multiplexing-Based OFDM-OCDMA for Radio-over-Fiber Transmissions.

Additional Questions:

Does the paper contribute to the body of knowledge?: Yes.

Is the paper technically sound?: Yes.

Is the subject matter presented in a comprehensive manner?: Yes.

Are the references provided applicable and sufficient?: Some references can be added.

If you have any questions, please contact article administrator: Ms. Ritika Gupta ritika.gupta@ieee.org