ISSN: 2320-5407
ISSN NO. 2320-5407
International Journal of Advanced Research
Publisher's Name: Jana Publication and Research LLP
www.journalijar.com

REVIEWER'S REPORT

Manuscript No.: **IJAR-52917** Date: 23-07-2025

Title: System design and performance analysis of highly concentrated WDM systems

Recommendation:
Accept as it is .....yes.....
Accept after minor revision.....
Accept after major revision .....
Do not accept (*Reasons below*) .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity	✓			
Significance		✓		

Reviewer Name: **Mr Bilal Mir**

Reviewer's Comment for Publication.

Review Report:

Abstract Review:
The abstract is concise and well-structured, clearly stating the objective, methodology, and key findings of the study. It emphasizes the implementation of a 32-channel DWDM system using OptiSystem software, with each channel transmitting at 10 Gbps over 100 GHz spaced carriers. The abstract effectively identifies the core challenges addressed—chromatic dispersion, attenuation, and inter-symbol interference—and describes the solution strategies through EDFAs and DCFs. The conclusion of high-fidelity signal recovery and low BER aligns well with the objectives. The keywords are relevant and representative of the core content.

Introduction Review:
The introduction effectively sets the context by underscoring the significance of WDM technology in enhancing optical network capacity. It highlights the operating principle of WDM systems and establishes the importance of bandwidth utilization in single-mode fibers. The references to prior works help anchor the current study within the broader field of optical communications. The tone and language are academic and precise, appropriate for a technical research paper. The rationale for choosing dense WDM and the motivation for the study are clearly articulated.

Technical Merit:
The paper demonstrates a high level of technical rigor in the design and analysis of the DWDM system. The use of OptiSystem software for simulation indicates a practical and industry-relevant approach. The choice of 32 channels at 10 Gbps and the channel spacing of 100 GHz reflect realistic and scalable system parameters. The integration of EDFAs and DCFs suggests an in-depth understanding of physical impairments in optical transmission. The reported outcomes, including low BER and successful signal recovery, attest to the robustness of the system design.

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Clarity and Organization:
The content is logically organized and written with technical clarity. The explanation of WDM principles and system components is coherent and facilitates reader comprehension. Terminology and notation are used correctly and consistently throughout the excerpt.

Originality and Relevance:
The study contributes to the field of high-speed optical communication by providing a concrete example of a dense WDM architecture. While DWDM systems are a well-researched area, the emphasis on optimizing amplifier placement and dispersion management within a 32-channel framework adds relevance. The work is of interest to both researchers and practitioners working on scalable, high-capacity optical networks.

Conclusion:
This is a well-executed and clearly presented study on the design and analysis of a DWDM system. It demonstrates strong technical understanding and provides relevant insights into mitigating physical layer impairments in high-speed optical transmission systems.