Dear Reviewer 1 :

Thank you for your comments concerning our manuscript entitled “Research and Experimental Verification on Efficiency Enhancement of Powersphere through Distributed Incidence Combined with Intracavity Light Uniformity” (ID: photonics-3844516). Those comments are all valuable and very helpful for revising and improving our paper, as well as the important guiding significance to our researches. We have studied comments carefully and have made correction which we hope meet with approval. The red font highlighted the changes of the content in the revised manuscript.

Yours sincerely,
Tiefeng He
4-September-2025

Responds to reviewer’s comments:

Responses to Reviewer 1’s Comments

[Reviewer 1’s Concern 1]

Reviewer 1:

I agree that optimizing receiver structure or introducing beam-splitting technology to balance light intensity could improve transmission efficiency. However, a receiver with six or more input ports is useless. As a receiver in laser wireless power transmission, uniform light distribution is important to efficiency on the conditions of light transmission. In fact, there are many papers on illumination uniformity of a circular rod in LD side-pumped lasers.

Response 1:

Thank the reviewer for this valuable comment.

Reviewer 1 proposed that the method of illuminating the cylindrical laser crystal with pumping light in the LD side-pumped laser is an effective approach to improving light uniformity. However, in laser wireless power transmission, the laser needs to propagate over long distances in the air. If light uniformity is processed at the laser source end, it would cause an excessive large divergence angle, leading to significant transmission losses.Therefore, in laser wireless power transmission, research on optical uniformity is primarily at a remote receiver. Accordingly, we propose a method of employing multiple inputs combined with spherical reflection to enhance the light uniformity on the inner surface of the cavity. Through theoretical derivation, simulation, and experimental verification, we have demonstrated that this method can effectively improve both the beam uniformity and the overall conversion efficiency of the system.

The grammar and spell check in the revised manuscript are not listed on the summary above.

Thank you and all the reviewers and editor for the kind advice.

Sincerely yours,

Tiefeng He