**Response to reviewer(s)’ comments**

Dear reviewers and editor,   
We would like to thank you for your comments. Please refer to our response to comments below:-

Abbreviation Key:   
ACO: Asymmetrically Clipped O-OFDM   
DCO: DC Biased O-OFDM   
ImR: Imaging Receiver   
MIMO: Multiple Input Multiple Output  
NImR: Non-imaging Receiver  
O-OFDM: Optical OFDM  
OFDM: Orthogonal Frequency Division Multiplexing   
OSM: Optical Spatial Modulation  
SIS-OFDM: Sample Indexed Spatial OFDM   
SISO: Single Input Single Output   
SNR: Signal to Noise Ratio  
QAM: Quadrature Amplitude Modulation   
VLC: Visible Light Communication

Changes done in revised manuscript:

1. In order to incorporate a fair performance comparison of SISO O-OFDM system, we have re-run our simulations with constraint that systems must provide the same illumination level (emit equal average flux) to fulfill dual purpose of providing illumination with communication.
2. Figures 2,3 and 4 have been updated to show the results with new simulations.
3. We have modified the text to better explain the SIS-OFDM idea and performance comparisons.

**Reviewer: 1**

1. Propose a new combination about the spatial modulation and SISO-OFDM to complete MIMO-OFDM

You are correct. We have proposed a novel way to combine OSM with different O-OFDM schemes. The resulting scheme is called SIS-OFDM.

1. Compare two OFDM method (ACO and DCO) ,two different receive approach scheme (ImR and NImR)

We have analyzed and compared the following SIS-OFDM systems:-

1. OSM + ACO + NImR
2. OSM + DCO + NImR
3. OSM + ACO + ImR
4. OSM + DCO + ImR

In response to Reviewer 2’s comments, we have also added reference curves for performance comparison with

1. SISO ACO
2. SISO DCO

**Reviewer: 2**

1. This paper shows a system implementing SIS-OFDM, which can achieve additional Nsc×log2(Ntx) bits per symbol of spectral efficiency as compared to SISO O-OFDM systems. However, there is no performance comparison between SIS-OFDM and SISO O-OFDM. Hence, it could not illustrate the advantage of the proposed system.
2. It is a good suggestion to compare performance of SIS-OFDM against SISO O-OFDM. We have addressed this in Figure 3 where you can see SIS-OFDM with ImR outperforms SISO-OFDM in terms of SNR required to achieve 10^-3 BER.
3. You are correct. The SIS-OFDM system does achieve additional Nsc×log2(Ntx) bits per symbol of spectral efficiency as compared to SISO O-OFDM systems. This in itself is a big gain in spectral efficiency. The following table outlines the additional spectral efficiency gains for the example configuration considered with Nsc=64, Ntx=4, 64-QAM for ACO and 8-QAM for DCO.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **SISO O-OFDM bits/symbol** | **SIS-OFDM bits/symbol** | **Additional bits/symbol** |
| **ACO** | 96 | 224 | 128 |
| **DCO** | 93 | 221 | 128 |

1. Additionally, since SIS-OFDM is a form of space-time code, we get additional coding gain.
2. A very important but subtle point to note is that in SIS-OFDM, due to OSM, only 1 luminaire (transmitter) is active at a given time. Because of this, in order to maintain a given illumination level, each transmitter uses the same average flux (instead of 1/Ntx, as in the case of identical channel gains) as compared to a SISO transmitter. This allows transmitted signal power gain (but not in the conventional beam-forming sense).
3. Moreover, the SNR in this paper is considered to be wrong, which was in the range of 100 to 300. We suggest the author to check the SNR in the results.
4. We realize that at first glance the SNR values in the range of 100 to 300 may appear very high. However please consider the following explanation.
5. For indoor VLC systems, transmitters perform dual function – a) illumination and b) wireless downlink. Because of this, a fair comparison of different modulation schemes can only be made when different schemes transmit the same average flux i.e. maintain the same illumination levels.
6. This is a different operating point as compared to conventional radio frequency systems and thus needs a different definition of SNR. This new SNR is defined as ratio of average *transmitted* flux to total noise. We have attempted to make this more evident in the revised text.
7. There is precedence for this definition in reference [11] and we have stayed true to this adopted convention.
8. Now since the signal considered is the *transmitted* flux and our example system has a channel loss of about 150dB, this value needs to be subtracted from the values as seen on the x-axis.
9. We have tried to illustrate this better in our revised figures.