We are grateful for the constructive feedback from the Reviewer, which has helped us strengthen the manuscript.

Comment 1:

General comment one: please consider improving the quality of the response letter. It is not easy to go through the draft and find your responses. Also, some revisions might need more descriptions/motivations, which is the purpose of the response letter.

Response:

Thank you for bringing this vital point to our attention. For the Reviewer's convenience, we incorporated all of the revisions to the manuscript that were made herein in this response letter.

Comment 2:

General comment two: the figures in the manuscript should show at the place where they are first mentioned in the text.

Response:

Thank you for bringing this vital point to our attention. In the updated version, we made every effort to meet the requirements of the Reviewer. Even though the authors use latex software, they lack the skills necessary to implement this comment precisely on their own.

We will kindly ask the editorial staff to consider this comment into account once the manuscript is accepted.

Comment 3:

About my previous comment 2: "The source, relay, and destination all have a single antenna, which significantly limits the contribution of the work." I could not see how it is easy to be extended to multiple-antenna systems.

Response:

Thank you for this insightful remark that prompted in-depth consideration and helped us enhance the manuscript.

The cooperative system under study involves three nodes: source, relay, and destination.

When thinking about more than one antenna at each node, many questions start to come up in our heads such as:

- How many antenna elements are at each node?

- What is the configuration of the transmission antennas at the source and relay nodes? In other word, is the configuration mode spatial multiplexing or space coding? And if it space coding, is it space time block coding or space trellis coding?

Each situation must be represented mathematically and the proposed method should undoubtedly be updated accordingly.

This is beyond the scope of the current manuscript. Thus, we leave this issue for future work.

Based on the Reviewer's comment, we replace the statement of

"However, the proposed method can be easily extended to multiple antenna elements at each node by using the same procedure as explained later on."

by the statement of

"We leave the implementation of multiple antennas at each node to future development."

Please see the first highlighted statement in Section 2 of the revised manuscript.

Comment 4:

The direct link is highlighted in (2) but I could not find good motivations.

Response:

Both situations of direct connection presence and absence are extensively discussed in the literature. Please see the references (e.g., [19-25] and references therein) of the revised manuscript.

Simply, we focused on the existence of direct link in this investigation.

Based on the Reviewer's comment, we included an additional statement to clarify this issue. For the Reviewer's convenience, we rewrote it here as

"Here, we underline that both situations of direct connection presence and absence are extensively discussed in the literature (e.g., [19-25] and references therein). We focus on the existence of direct link in this investigation."

Please see the second highlighted statement in Section 2 of the revised manuscript.

Comment 5:

About my previous comment 6: "The lack of comparison with other methods, analytical results, as well as complexity analysis makes the paper has limited contributions." The improvement in the revision, e.g., comparison with [10], is not sufficient to cover this concern.

Response:

Based on the Reviewer's comment, we compare the proposed method with references [10, 25]. Please keep in mind that they are the only two references in the literature available for comparison. Please see figure 14 of the revised manuscript along with its discussion. Please note that the complexity analysis was included at the end of Section 4 of the original manuscript. For the Reviewer's convenience, we included the mentioned figure and its discussion in the following. Also, we included the complexity analysis.

For comparative purposes, figure 14 depicts the awareness performance obtained by the proposed method in addition to that obtained by the technique described in [10,25] for the modulation set θ_4. The findings reveal that the proposed method significantly outperforms the methods described in [10,25], which are unable to deliver a suitable awareness performance even at high SNR levels. This is because the approaches described in [10,25] are based on a DF relaying scheme in which the relay re-transmits the received frame if it is correctly decoded. Here we recall that the DF relaying system may fail to decode the received frame at the relay due to channel circumstances, which has a detrimental impact on modulation awareness performance. Furthermore, the method presented in [25] demonstrates a very poor awareness performance due to the absence of a training preamble.

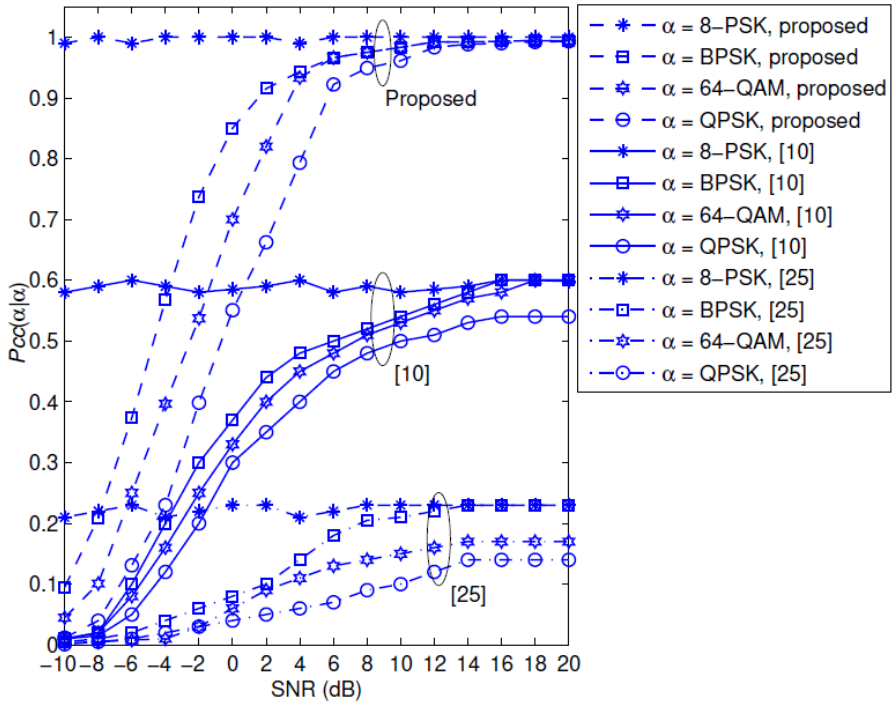

Figure 14. Awareness performance comparison with the modulation set θ_4.

The computational complexity of the suggested AMA method is analysed by counting the number of necessary floating point operations (fops) [32,33]. The multiplication of two complex numbers takes six fops, while their addition only requires two fops. A complex number's modulus involves three fops. Based on the proceeding analysis, the number of fops required at each node is approximately expressed as $18(K^2 + K)$. Available technology looks sufficient for the algorithm's practical execution. For a numerical example, we assume that $K = 1000$ with a processor of 10 Terafops per second, the processing time is 18 microsecond, which is feasible for real-world applications.

Thank you for your constructive comments which made us think in-depth and helped us improve the manuscript.