

Peer Review

Review of: "Upper Mid-Band Spectrum for 6G: Vision, Opportunity and Challenges"

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This paper offers a detailed exploration of the potential of the FR3 spectrum for 6G networks, highlighting its key benefits, such as improved spectral agility, support for multi-band operations, and the capability to integrate with massive MIMO technology. A particularly interesting aspect of the paper is its focus on combining O-RAN with AI/ML optimization, which could play a crucial role in optimizing network performance. Additionally, the discussion on multi-band sensing for Integrated Sensing and Communication (ISAC) adds another layer of depth to the analysis.

Strengths:

- The paper provides a comprehensive look at the capabilities of the FR3 spectrum, particularly its ability to facilitate dynamic spectrum sharing and advanced beamforming techniques.
- The integration of O-RAN is well-articulated, offering a strong case for smarter, more efficient spectrum management.
- The exploration of multi-band sensing and the careful balancing between low and high-frequency bands is a valuable contribution to the field.

Areas for Improvement:

- One notable gap is the lack of real-world case studies or simulation results to back up the theoretical concepts presented. Adding these would make the arguments more tangible and credible.
- The discussion on regulatory challenges and the practical hurdles of deploying these technologies feels a bit underdeveloped. A deeper dive into these aspects would add significant value.

- The paper could benefit from a more detailed analysis of the trade-offs, especially when comparing fully-digital versus hybrid beamforming designs, particularly in terms of power consumption.

Conclusion:

Overall, the paper presents a solid theoretical framework for utilizing the FR3 spectrum in 6G networks. However, for a more complete picture, it would benefit from the inclusion of practical data and a more thorough examination of the regulatory and implementation challenges that could arise in real-world deployments.

Recommendation:

I'd recommend some minor revisions to ground the paper more firmly in real-world applications. More specific examples, as well as a deeper look into practical concerns, would significantly enhance its impact.

Declarations

Potential competing interests: No potential competing interests to declare.