This manuscript adopts a radio map to reduce the required number of sampling points for fingerprint-based localization. The idea is interesting and introduces some new perspectives to the field. The simulation results further demonstrate its potential in achieving reduced sampling effort while maintaining satisfactory localization performance.

Although this manuscript is interesting and addresses an important topic, I have the following concerns that should be carefully addressed:

1. Is the idea of utilizing an interpolated radio map to assist fingerprint-based localization proposed for the first time in this work? If so, the authors should explicitly emphasize this contribution in both the Introduction and the Conclusion. If not, please clearly articulate the specific novelty of the proposed approach, and provide a quantitative comparison with relevant existing algorithms in the simulation section.

2. The proposed method appears to be limited to 2D localization scenarios. Can the approach be extended to 3D environments, which are common in practical applications such as indoor localization? The authors are encouraged to discuss this point explicitly.

3. The parameter settings in the simulation are questionable. Specifically, the noise power should be expressed as the noise power spectral density, typically set to -174 dBm/Hz, rather than simply -174 dBm, which is physically inaccurate. Moreover, the simulated area is only 40 × 40 m², yet contains 4 base stations, which raises concerns about the practicality and realism of the deployment. The authors should justify whether such a dense BS deployment in such a small area is appropriate and realistic.

4. A major concern is the absence of computational complexity analysis. Without this, it is difficult to evaluate whether the proposed algorithm is practically beneficial. In particular, if constructing the interpolated radio map incurs significant computational overhead, it may offset the claimed advantages, and a simple increase in sampling density could be preferable. The authors should provide a detailed complexity analysis and discuss this trade-off.