RESEARCH ARTICLE | AUGUST 24 2023

Performance analysis of various 5G multicarrier techniques

Elavel Visuvanathan Ganesan ; Jaya Thangappan

+ Author & Article Information

AIP Conf. Proc. 2790, 020053 (2023)

https://doi.org/10.1063/5.0152586

Since 5G is an up-and-coming technology, simulation of proposed modulation techniques i.e. Filter Bank Multicarrier (FBMC), Universal Filtered Multicarrier (UFMC) is necessary. This project aims to compare the performance of the various contenders for the fifth generation. The performance Universal-Filtered Multi-Carrier (UFMC) and Filter Bank Multi-carrier (FBMC) are compared with the performance of Orthogonal Frequency Division Multiplexing (OFDM) technology used as the main concept in fourth generation (4G). As all signals are susceptible to Rayleigh and Rician fading it is necessary to analyse the performance of the modulation techniques when subjected to fading.

Topics

Signal processing, **Telecommunications engineering**

REFERENCES

1. E. Ayanoglu, "5G today: Modulation technique alternatives," *2016 International Conference on Computing, Networking and Communications (ICNC)*, 2016, pp. 1–5.
Google Scholar

2. Dr.V.D. Ambeth Kumar, Dr.S. Malathi, V.D. Ashok Kumar (2015) “Performance Improvement Using an Automation System for Segmentation of Multiple Parametric Features Based on Human Footprint” *for the Journal of Electrical Engineering & Technology (JEET)*, vol. 10, no. 4, pp.1815–1821, 2015.
https://doi.org/10.5370/JEET.2015.10.4.1815
Google Scholar

3. Bhasker, Akshita, “Modulation Schemes for Future 5G Cellular Networks”, *IRACST – International Journal of Computer Networks and Wireless Communications(IJCNWC),* ISSN: 2250-3501 Vol.8, No 1, Jan-Feb 2018.
Google Scholar

4. V.D. AmbethKumar, (2015), “Performance Improvement of Data Transfer Management in Mobile Cloud Computing”, *National Conference on "INNOVATIONS in IT, MANAGEMENT & EDUCATION-DIGITAL INDIA INITIATIVE (IIMEDII-2015), 21ST March 2015, at Maharaja Surajmal Institute - 110058*, New Delhi, India.(ISBN:978-16-31024-51-1).
Google Scholar

5. H. Jebbar, S. E. Hassani and A. E. Abbassi, "Performance study of 5G multicarrier waveforms," *2017 International Conference on Wireless Networks and Mobile Communications (WINCOM)*, 2017, pp. 1–6.
Google Scholar

6. Van Eeckhaute, M., Bourdoux, A., De Doncker, P. et al. “Performance of emerging multi-carrier waveforms for 5G asynchronous communications”, *Journal of WirelessCommunication Network* 2017, Volume 29, (2017).
Google Scholar

7. V.D.A Kumar and Dr.M. Ramakrishan (2011), “Enhancement in Footprint Image using Diverse Filtering Technique” *in the month of December for the International Conference on Communication Technology & System Design (ICCTSD 2011)*, 7–9 December 2011, AMRITA VISHWA VIDYAPEETHAM University, Coimbatore, Chennai, India and the paper was published in the conference proceedings. *doi*: https://doi.org/10.1016/j.proeng.2012.01.965
Google Scholar

8. Urmila Suhagiya, Prof. R.C. Patel, “Design and Implementation of OFDM transmitter and receiver using 8-point FFT/IFFT”, *International Journal of Software and Hardware Research in Engineering,* ISSNNo:2347-4890,Volume2,Issue2February2014.
Google Scholar

9. Y. Cai, Z. Qin, F. Cui, G. Y. Li and J. A. McCann, "Modulation and Multiple Access for 5G Networks," in *IEEE Communications Surveys & Tutorials*, vol. 20, no. 1, pp. 629–646, Firstquarter 2018. https://doi.org/10.1109/COMST.2017.2766698
Google Scholar

10. Kumar, V. D. A., S. Malathi R. Venkatesan K. Ramalakshmi, Weiping Ding, Abhishek Kumar "Exploration of an innovative geometric parameter based on performance enhancement for foot print recognition", *Journal of Intelligent and Fuzzy System*, vol. 38, no. 2, pp. 2181–2196, 2020. *DOI*:
https://doi.org/10.3233/JIFS-190982
Google Scholar

11. Visuvanathan Ganesan, E., Jaya, T. "CFO and STO estimation and correction in multicarrier communications using linear filter bank multicarrier", *Transactions on Emerging Telecommunications Technologies*, Vol 32, Issue 3, March 2021.
Google Scholar

12. V.D. Ambeth Kumar and Dr.M. Ramakrishan (2012) "Enhancement in Footprint Image using Diverse Filtering Technique" *in the month of March for the Procedia Engineering journal (Elsevier) Journal* Volume 8, No.12, 1072–1080, March 2012 and the paper was published. [doi:
https://doi.org/10.1016/j.proeng.2012.01.965]
Google Scholar

13. V.D. Ambeth Kumar, G. Gokul, S. Malathi, K. Vengatesan, D. Elangovan, B. Chitra, "Implementation Of The Pulse Rhythemic Rate For The Efficient Diagonising Of The Heart Beat", ", *Healthcare Technology Letters (IET)* 2019 Apr 17;6(2):48–52. DOI: https://doi.org/10.1049/htl.2018.5043
Google Scholar

This content is only available via PDF.

Sign in

Don't already have an account? Register

Sign In

Username

Password

Reset password
Register

Sign in via your Institution

Pay-Per-View Access $40.00

BUY THIS ARTICLE