

A Taxonomy on Vehicle to Vehicle Communication using 5G

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Abstract: *With the fast development of technology, the fifth generation mobile communication (5G) had wide range of attention due to higher frequency, greater network capacity, and lower latency. It has many technologies, among which beam management for vehicle to vehicle communications in millimeter wave 5G plays important part in vehicular communications. It is always required to design and develop wireless technologies to reach raising demands of high speed wireless data to get advanced transport system. As 5G wireless communication adoption is increasing and its vehicle to everything communications had implemented V2V communications and main motto of vehicle to vehicle communication is to improve efficiency of traffic and to avoid accidents as intake of 5G is increasing beam formed vehicular communications at millimeter - wave bands await to allow the most demanding connected driving applications. Beam management is a fast changing scenario and we come across practical limitations of 5G to enhance successful beam forming procedures. This paper came up with two beam management techniques. Both the techniques are examined in terms of power performance, beam recovery time and channel usage and the outcome is there is significant differences came when beam is more frequently updated and there is brief enhancement is noticed by increasing size of beam set so selection of proper strategy also plays a key role.*

Keywords: 5G, V2V, Beam forming, Beam management

REFERENCES

- [1]. Huawei-HiSilicon, Sidelink synchronization mechanisms for NR V2X, Technical Document R1-1901539, 3rd Generation Partnership Project (3GPP), March 2019.
- [2]. Huawei-HiSilicon, Beamforming for V2X sidelink for FR1 and FR2, Technical Document R1-1903075, 3rd Generation Partnership Project (3GPP), March 2019.
- [3]. D. Medina, L. Hu, H. Rosier, S. Ayaz, Interference-aware dynamic resource allocation for D2D proximity services with beamforming support, in: 2015 IEEE Global Communications.
- [4]. The Road to 5G: Drivers, Applications, Requirements and Technical Development, Ericsson, Huawei, and Qualcomm, Global Mobile Suppliers Assoc., Washington, DC, USA, 2015.
- [5]. L. Neira, "5G: A network of opportunities and challenges," Axon Partners Group, Madrid, Spain Tech. Rep. V2, 2017.
- [6]. S. A. A. Shah, E. Ahmed, M. Imran, and S. Zeadally, "5G for vehicular communications," IEEE Communication, Jan. 2018.
- [7]. S. Mumtaz, K.M.S. Huq, M.I. Ashraf, J. Rodriguez, V. Monteiro, C. Politis, Cognitive vehicular communication for 5G, IEEE Communication.
- [8]. 5G Automotive Vision (2015).
- [9]. D. Jiang, L. Delgrossi, IEEE 802.11p: towards an international standard for wireless access in vehicular environments, in: IEEE Vehicular Technology Conference, 2008.