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Indoor Visible Light Communication Channel Characterization for User Mobility: A Use-Case Study

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Abstract : The last decade has witnessed a significant interest in visible light communication (VLC) technology, as VLC can potentially achieve high data rate links and secure communication channels. However, the use of VLC under mobile settings is fundamentally limited as its a line-of-sight (LOS) technology and there has been limited breakthroughs in realizing VLC for mobile settings. In this regard, this work targets to study the VLC channel under mobility. Through a use-case study analysis with experiment data traces this paper presents an empirical VLC channel study considering the application of VLC for smart lighting in an indoor room environment. This paper contributes a calibration study of a prototype VLC smart lighting system in an indoor environment and through the inferences gained from the calibration, and considering a user is carrying a mobile device fit with a VLC receiver, this work presents recommendations for user's position adjustments, with the goal to ensure maximum connectivity across the room.

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