

Performance analysis of IEEE 802.15.6 MAC layer access modes

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Abstract:

Designing ultra low power MAC protocols for wireless body area sensor networks has been one of the interesting challenges. As per recently published IEEE 802.15.6-2012 standard, the network shall operate in one of three access modes – beacon mode, non-beacon modes (with and without boundaries). The IEEE 802.15.6 standard offers a flexible superframe structure that can be adjusted by the hub to suit the communication requirements of the hub. However, the standard leaves open the higher level questions such as: should we use contention-based, scheduled, or improvised access, and under what conditions should we them? In this paper, we investigated various MAC modes for different healthcare applications and evaluated their performance. This analysis and knowledge is the key to selection of optimal access modes and implementation of a reliable and energy efficient body area network.