

With the expected explosion in the number of devices in the Internet-of-Things (IoT), the availability of spectrum for these devices to connect to the network is a challenging problem. A possible solution to this problem is the use of opportunistic machine-to-machine (M2M) communications where IoT devices exploit idle periods of primary users (i.e., users with higher priority on spectrum usage) to transmit their data. The feasibility of such opportunistic M2M communication depends on the temporal characteristics of the availability of unused spectrum. Considering the unlicensed bands where Wi-Fi devices are the primary users, we present a BMAP/G/1/nK queue-based model to characterize the duration and frequency of the periods available for opportunistic M2M communications. Our results show that M2M devices may co-exist with W-Fi networks, and even in Wi-Fi networks with high loads, there are adequately long and frequent idle periods that can be used to support opportunistic M2M communications.