Technical Report

On the Capacity of Cluster-tree ZigBee Networks

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Abstract

Modeling the fundamental performance limits of Wireless Sensor Networks (WSNs) is of paramount importance to understand their behavior under worst-case conditions and to make the appropriate design choices. In that direction this paper contributes with an analytical methodology for modeling cluster-tree WSNs where the data sink can either be static or mobile. We assess the validity and pessimism of analytical model by comparing the worst-case results with the values measured through an experimental test-bed based on Commercial-Off-The-Shelf (COTS) technologies, namely TelosB motes running TinyOS.