ABSTRACT

IEEE 802.15.4 standard supports some kind of network topology, they are star topology (single-hop), peer-to peer (multi-hop mesh), and cluster tree. In these three topologies, a PAN coordinator must be specified to initiate and settle the network. PAN Coordinator has function as centre node to manage the network and allocate network resource.

Through base station (PAN Coordinator) selection process, makes the flexibility of network become finite and influence the node performance in a network. On that count, this research tries to simulate some parameters based on IEEE 802.15.4 standard, like Beacon Order (BO), Superframe Order (SO), and traffic application on WSN using star topology to analyze this point, also analyze about influence of node to PAN Coordinator distance.

Based on my simulation, the result shows that condition of the value of the BO and SO parameters effectively contained in BO=SO=4. Else, the change of node numbers influence the network performance, where this case is happened both in beacon-enabled and beaconless-enabled configuration. Performance influence in these both networks is caused by the failure to synchronize beacon on a beacon-enabled configuration, whereas in beaconless-enabled configuration is caused by the collision of the data packets while the packets are transmitted from a node device to PAN coordinator.

Key words: IEEE 802.15.4, LR-WPAN, WSN, beacon