Indoor Location System using a Wireless Sensor Network

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Abstract

A Received Signal Strength (RSS)-based Indoor Location Method (ILS) is presented in this contribution. The motivation is the location/tracking of person/assets in indoor scenarios. The proposed network infrastructure consists on a set of receivers that measures the RSS value from a transmitter node which is attached to the asset to be located. Theoretical bases of the method are the integral equations relating the electromagnetic (EM) fields with their sources, establishing a cost function relating the measured field at the receivers and the unknown position of the transmitter. The location method is evaluated in several indoor scenarios using portable measurement equipment. Once the method is successfully tested, next step is the network hardware implementation: for this purpose, ZigBee nodes have been selected. Finally, an application example using the proposed ZigBee-based sensor network is presented.