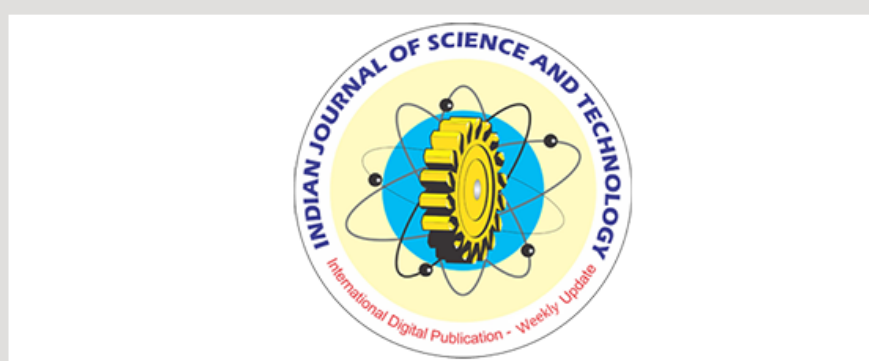



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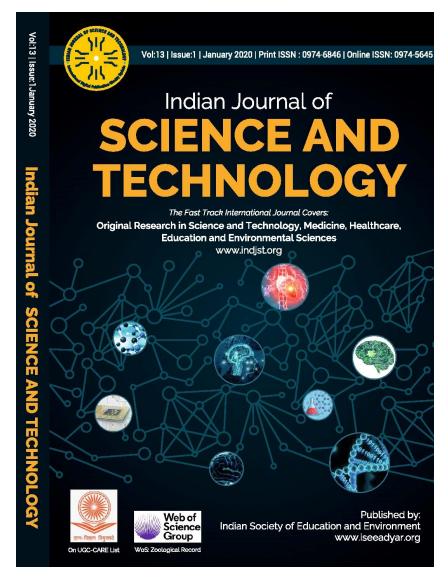
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Original Article

Model for Optimizing the Location of the Access Point in 802.11ac Networks Supported in the Model Log-Normal Shadowing

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ABSTRACT



Background/Objectives: Designing a Wireless Local Area Network (WLAN) assumes great importance in determining the optimal placement of Access Points (APs) and assigning channels in order to achieve maximum levels of coverage and performance. The aim of this paper is to develop an optimization model for the location of the AP in indoor environments, the 2.4GHz and 5GHz, supported on the propagation model Log-Normal Shadowing.

Methods/Statistical Analysis: To estimate the optimal location of the AP model, nonlinear optimization was proposed based on the probability cutting frequency bands, the dimensions of the environment, the transmission power, sensitivity receptor and the coverage radius, which two routines in Matlab for systematization model, supported in the propagation model Log-Normal Shadowing path loss, which allows developed decompose the received power at an average power and attenuation term shadow.

Topic Relevance: Although there have been several related resource optimization work WLANs are very few studies have considered engaging in their research strategies for optimizing the geographic location of the AP. Aspect by which developed in Matlab routines may be used in future research related to the design of WLANs.

Results: Based on the results it was evident that it is possible to predict the optimum location of the AP for the 2.4GHz and 5GHz, depending on the transmission power, the detection threshold of the receiver, the probability estimated cut and characterization of the environment between the AP, either free space or obstacles, supported the use of a shadow attenuation model. In addition, routines allowed establishing the Cartesian coordinates in which the location of the AP function of the radius of coverage, frequency band and environmental conditions, with 95% confidence is suggested.

Application/Improvements: The developed routines can be used as support tools in future research work, related to the design and analysis of wireless networks that use the 2.4GHz and 5GHz bands, in order to evaluate aspects of interference, coverage, performance, efficiency and QoS.

Keywords: Coverage Area, Interference, Location, Optimization, Outage Probability, WLAN Networks

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