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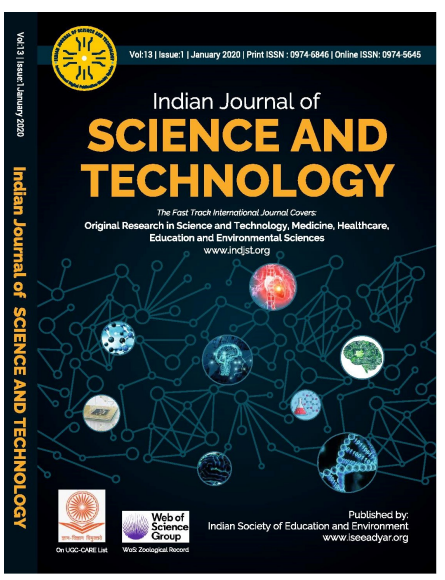

Original Article

Algorithms for Estimation of the Coverage Area and Low Blocking Probability Model Log-Normal Shadowing for 2.4 GHz and 5 GHz in Indoor Environments

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ABSTRACT

Background/Objectives: In designing WLAN networks is difficult to determine exactly the maximum range of the signal radiated by an Access Point, due to the random behavior of the signal received power and receiver sensitivity. The aim of this paper is to develop an algorithm estimate the probability of Court and the coverage area for an Access Point (AP) in the 2.4GHz and 5GHz bands. **Methods/Statistical Analysis**: For estimating the outage probability and the coverage area, two routines in Matlab for each frequency band supported on the propagation model Log-Normal Shadowing Path Loss developed, which allow decompose the received power at an average power and attenuation term shadow. To**pic Relevance**: Although there have been various related design WLANs work, no evidence of an algorithm to estimate the coverage area and the likelihood of court, considering it was found that, in most cases, the estimation of these parameters it is performed graphically and by using software tools on a plane set by the designer. 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 area of coverage and outage probability for the 2.4GHz and 5GHz according to the transmission power, the detection threshold of the receiver, the probability estimated cut and environment characterization between the AP and the receiver, either free space or obstacles, supported using a shadow model attenuation. Additionally, routines allowed the generation of curves describing the behavior of area coverage and outage probability in terms of percent, depending on the radius of coverage, frequency band and environmental conditions, with 95% confidence. Application/ Improvements: The developed routines can be used as support tools in future research.

Keywords: Coverage Area, Interference, Outage Probability, Reception Power, WLAN Networks

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