DOI: https://doi.org/10.53555/nneee.v1i2.257 Publication URL:https://nnpub.org/index.php/EEE/article/view/257

Evaluation and Modelling of UHF Radiowave Propagation in a Forested Environment

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How To Cite This Article:

Yadav, Y. (2014). Evaluation and Modelling of UHF Radiowave Propagation in a Forested Environment. *Journal of Advance Research in Electrical & Electronics Engineering (ISSN 2208-2395)*, *1*(2), 07-09. https://doi.org/10.53555/nneee.v1i2.257

Abstract

Wireless network optimal performance is a major interest in communication engineering. Radio wave propagation in forested environment has been the interest of much theoretical and experimental research over the years. One of the concepts is to use wireless empirical models to predict wireless link quality of service such as path loss and the received power in a transmission domain with irregular terrain. Measurement results of signal strength in UHF band obtained during the two prominent seasons; raining season (when the trees are in leaf) and dry season (when the trees are relatively out of leaf) Idanre-Apomu axis of Ondo State Nigeria were validated against theoretical estimations. However, using the least squared error fit for several sets of measurement data, an empirical model was developed and incorporated into Matlab graphical user interface (GUI) which can be deployed by wireless communication network providers in wireless networks design for path loss prediction and received power in a forested environment.

Keyword: Forested environment, measurements, empirical model,, UHF band, Matlab GUI