SIGNAL STRENGTH MEASUREMENT

Prepared by: Umar Farouk Junaidu

ABSTRACT

Radio wave propagation modeling is known by many RF engineers as well as researches. There are various models described in many textbooks rather discuss them briefly. Scientists as well as engineers are very much interested on how electromagnetic wave is affected by an environmental object before it reaches the receiver. In this project, signal strength fields measurements are carried out (at a frequency of 465MHz) around the academic block on INTI UC. The targeting blocks of buildings to be used are A, B, C and D with the campus being approximately 70mx70m in meter square.

Block A = Administration block	Block C = Departments
Block B = Classrooms	Block D = Administration and classrooms

This project is basically provides an overture in modeling the radio channel. A mathematical model for each of the targeted blocks was derived and afterwards the propagation model for the INTI UC was developed based on the characteristics of the signal measurements. The mathematical models for each of the levels were derived using Microsoft Excel whereby curve fitting analysis was employed. The best possible curve was derived for each model using polynomial function and from there on the propagation model for INTI UC was proposed.

Furthermore, it should be noted that only outdoor environments have been experimented on however the environment is not entirely outdoor. The end of the project will show a model to describe how radio wave is propagated around the campus. The data collected will be useful for Wi-Fi engineers to install hot spot around the campus.

Keywords: radio wave propagation, mathematical modeling, curve fitting methods.