



# **INDOOR SIGNAL PROPAGATION - A CASE STUDY FOR SRI LANKA-**

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## Abstract

Mobile communication radio channel varies very rapidly at times and causes very hard to predict its behavior and characteristics. Even if the channel does not explicitly change, speed of the mobile user and the surrounding will contribute to these variations causing many problems for mobile communication. Therefore study of Indoor signal propagation is an important factor in arriving at a good mobile network design.

Most of the work carried out in this area is specific for a particular country, region or area as evident by previous researches. Research specific to an area is essential since deals with surrounding buildings, environment and especially in the case of indoor propagation building material used for construction.

In this research the radio signal strengths inside a building were measured for two cases; one where the transmitter is an outdoor antenna installation and the other where the transmitter is an indoor antenna installation. Literature surveyed propagation models, equations and other graphs were used to map the measured and analyzed signal strength values, attenuation characteristics, propagation characteristics.

Principal objectives of the research were to determine how these parameters fit into best model(s) and determine the parameters appropriately to suit the conditions in Sri Lankan context. The parameters obtained are of similar range with other literature surveyed values such as path loss exponent, floor attenuation factor and partition attenuation factor values.

The parameters obtained can be used for any commercial software used in indoor signal strength estimations as the starting values for signal strength optimization and in order to obtain better results in terms of optimum signal coverage and optimum antenna placement. Generalization of these parameters for Sri Lankan context can be



done once similar type of analysis is carried out in many buildings in Sri Lanka.