

# ANALYSIS THE INFLUENCE FACTORS OF THE INDOOR PATH LOSS CALCULATION

L. P. S. S. Dissanayake<sup>1</sup>, D. M. L. M. Dissanayake <sup>2</sup>and H.P.A.I. Pathirana<sup>3</sup>

<sup>1</sup> *Department of Network Technology, University of Vocational Technology, Sri Lanka*

<sup>2</sup> *Department of Statistics & Computer Science, University of Kelaniya, Sri Lanka*

<sup>3</sup> *Department of Software Technology, University of Vocational Technology, Sri Lanka*  
*suranga@uovt.ac.lk*

**Abstract:** Modeling the indoor path loss is an essential part of wireless communication network planning. Indoor environments, particularly workstations, are always changing. Accurate path loss models are necessary for dependable network performance and coverage. Path loss is influenced by a number of elements, including the surrounding environment, construction materials, layout, frequency range, antenna characteristics, and the presence of obstructions like furniture or walls. It is difficult to develop universal models that work in all indoor situations because of these characteristics, which introduce notable variances in signal attenuation. Furthermore, traditional models might not be adequate for present and future network requirements given the quick evolution of office designs and the expanding usage of wireless technology. The main elements affecting indoor path loss modeling are thoroughly examined in this paper, with an emphasis on how they affect the precision and dependability of radio propagation models. That specifically looks at how environmental elements like humidity, temperature, and device interference affect the path loss. The study also looks into how the different frequency bands impact to the signal behavior with different indoor settings and how structures and structural components contribute to signal degradation. The research seeks to improve knowledge of indoor radio propagation and provide useful insights for network design optimization by examining the interactions of various variables which impact for the indoor pathloss.

**Keywords:** Indoor Coverage, Pathloss, Model Tuning, Signal Propagation, Attenuation,