

# **A Propagation Prediction Model in Vegetated Residential Environments – A Simplified Analytical Approach**

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## **Abstract:**

In a vegetated residential area, a wireless system has the base-station transmitter located close to the surrounding rooftops, so that propagation takes place over the rooftops and through the canopy of the trees that are above the houses. For a receiving antenna on the street level, the propagation loss can be decomposed into three components namely free space, multi-screen diffraction and rooftop-to-street scattering. The multi-screen diffraction can be modelled as the  $10 \times \log$ arithmic of the settled fields as proposed in Walfisch-Bertoni model. A simplified analytical theoretical model is proposed in this paper to compute the multi-screen diffraction loss between a base-station transmitter and a mobile receiver in a vegetated residential area with particular application to mobile radio systems.

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