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**ESTIMATION OF PROPAGATION CHARACTERISTICS  
IN MOBILE ENVIRONMENT**



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**Submitted in partial fulfilment for the degree of Master of Engineering in  
Electronics & Telecommunications**

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The work presented in this dissertation has  
not been submitted for the fulfillment  
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## **Abstract**

Propagation in land mobile services including cellular is affected in varying degrees by topography, vegetation, man made structures, ground constants, the troposphere and the ionosphere. Also propagation of energy is strongly influenced by several factors including the natural and artificial relief, propagation frequency, antenna heights and others.

The mobile radio signal varies in time and with spatial displacement. Even in the static case where the transmitter and receiver are fixed, the channel can be dynamic, since scatterers and reflectors are likely to be in motion. Thus multipath arises from the fact that through reflection, diffraction and scattering radio waves can travel from a transmitter to a receiver by many paths. Hence a precise estimation of signal characteristics in this environment constitutes a hard task.

The thesis describes exercises in the estimation of the characteristics of cellular mobile signals operating in 900 MHz band through the real measurements obtained in different environments in Sri Lanka and the results of these exercises. Even though similar researches have been conducted in places like Europe, North America and Japan to derive empirical formulae such as Okomura- Hata Model, ITU-R P.529, COST231, no study has been done as yet to check the suitability of these models to the Sri Lankan environment.

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