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Evaluation of Long Term Evolution Mobile Signal Propagation Models and Vegetation Attenuation in the Livestock Department at Escuela Superior Politécnica de Chimborazo

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Abstract : This article evaluates and compares three propagation models: the Okumura-Hata model, the Ericsson 9999 model, and the SUI model. The inclusion of vegetation attenuation in the area is also taken into account. These mathematical models aim to predict the power loss between a transmitting antenna (Tx) and a receiving antenna (Rx). The study was conducted in the open areas of the Livestock Department at the Escuela Superior Politécnica de Chimborazo (ESPOCH) University, located in the city of Riobamba, Ecuador. The necessary parameters for each model were calculated, considering LTE technology. The transmitting antenna belongs to the mobile phone company ”TUENTI” in Band 2, operating at a frequency of 1940 MHz. The reception power data in the area were empirically measured using the ”Network Cell Info” application. A total of 170 samples were collected, distributed across 19 radius, forming concentric circles around the transmitting antenna. The results demonstrate that the Okumura Hata urban model provides the best fit to the measured data.

Keywords : propagation models, reception power, LTE, power losses, correction factor
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