

# Path Loss Models in NLOS Conditions for Relay Mobile Channels

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**Abstract:**

Relaying technique is a key feature for 3GPP LTE-Advanced proposed to enhance the system performances such as spectral efficiency and throughput. In order to evaluate system performance, propagation path loss models for the links between the Base Station-Relay Station (BS-RS), the Base Station-Mobile Station (BS-MS) and the Relay Station-Mobile Station (RS-MS) must be investigated. This paper studies the impact of the RS antenna height and the environment around it on the RS-MS link based on a measurement campaign. Furthermore, it aims to propose a log-distance Path Loss (PL) model with a fixed PL exponent for Non-Line of Sight (NLOS) conditions. The analysis shows that the PL decreases while the relay antenna height increases (0.6 dB/m). A variation, from 1.3 to 18.3 dB, of the y-intercept values is noted depending on the RS antenna height and the environment around it. Moreover, the shadow fading is characterized with a standard deviation of 9.6 Db.