

# **Impact of the Multipath Fading Environment on LTE System-Level Performance**

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**Abstract:**

Mobile networks based on Long-Term Evolution (LTE) are currently being deployed to meet the rapid growth of mobile data traffic. In this paper we study how the performance of LTE is impacted by the multipath behaviour in the radio channel, considering the influence of both delay spread and spatial channel correlation. To this end system-level simulations have been performed, including in the simulation model the important effect of dynamic mechanisms such as Adaptive Modulation and Coding and adaptive transmission model selection. The results show that the average throughput of a data flow is almost independent of delay spread. The performance of Multiple Input Multiple Output antenna systems is shown to depend on the spatial correlation between antenna elements, in particular for the Spatial Multiplexing MIMO scheme.