

Comparison of Ray Tracing and Channel-Sounder Measurements for Vehicular Communications

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Abstract:

This paper presents the results of an accuracy study of a deterministic channel model for vehicle-to-vehicle (V2V) communications. Channel simulations obtained from the ray-tracing model developed by TU Braunschweig are compared to data gathered during the DRIVEWAY V2V channel measurement campaign at 5.6 GHz in the city of Lund in summer 2009. The analysis focuses on PDP and channel gains in an urban four-way intersection scenario. Despite of some implementation-based limitations of the ray-tracing model, a very good agreement between simulation and measurement results is achieved. Most relevant power contributions arising from multiple-bounce specular reflections as well as single-bounce non-specular reflections are captured by the deterministic model. We also discuss the question to what extent roadside obstacles like traffic signs, parked cars or lamp posts have to be considered when characterizing the V2V channel.