

Challenges in vehicular communications for impactful systems - Dynamics, Doppler, and Delay

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Abstract:

Traffic telematics applications are currently under intense research and development for making transportation safer, more efficient, and cleaner. Communication systems which provide “always on” connectivity at data rates between 1 and 10 Mb/s to highly mobile surface traffic (cars and trains) are urgently required for developing traffic telematics applications and services.

This contribution presents a description of an extensive measurement campaign during April 2007 in Lund, Sweden, in an urban scenario, a rural scenario, and on a highway. We measured car-to-car and car-to-infrastructure channels in 4×4 multiple-input multiple-output (MIMO) configuration in the 5.2 GHz band with high Doppler resolution. Here, we discuss the estimated pathloss behaviour, power-delay profiles, and delay-Doppler spectra from selected measurement runs, and their implications for vehicular peer-to-peer networks for increased safety.