

Stress Test Of Vehicular Communication Transceivers Using Software Defined Radio

Author(s) - Institution(s):

Dimitrios, Vlastaras, LU
Steffen, Malkowsky, LU
Fredrik, Tufvesson, LU

Corresponding author email: dimitrios.vlastaras@eit.lth.se

Corresponding WG group: TWGV

Abstract:

Wireless vehicular communication is in contrast to other terrestrial types of wireless communication (e.g. cellular), more dynamic in nature. Both the transmitter and the receiver are moving at high speeds relative to each other, which generates fast-fading wireless channels. Such channels are characterized by short stationarity regions and large Doppler spreads. Modem manufacturers face a challenge when designing and implementing equipment for such environments. Similarly testing and evaluation may require real-life measurements with vehicles. This is often an expensive and slow process. This paper tackles this problem by proposing the design and implementation of a real-time wireless channel emulator for wireless vehicular communications based on a software defined radio (SDR) and also evaluates two prototype IEEE 802.11p modems. Such a device enables quick on-bench evaluation of wireless transceivers.