C-ITS Coexistence with Electronic Road Tolling

Technical information on the successful implementation and operation of coexistence measures between C-ITS services based on ITS-G5 and road tolling based on CEN DSRC

Austria has an operational C-ITS (ITS-G5) roll-out and at the same time a CEN DSRC tolling system on the Austrian highway/motorway network. Both systems need to coexist, and the Austrian road operator ASFINAG is able to share the positive experience how coexistence has been achieved.

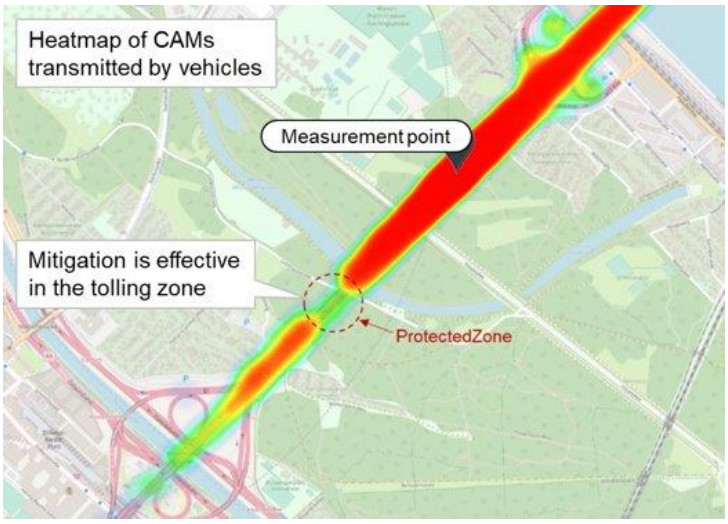
Cooperative ITS (C-ITS) deployment in Europe uses the 5.9 GHz band for ITS-G5 (IEEE 802.11) short range communication, while the neighbouring 5.8 GHz band hosts electronic road tolling based on CEN DSRC. Both C-ITS and road tolling are built into vehicles and operate at close distance. Therefore, radio interference needs to be mitigated.

Only the coexistence between ITS-G5 (IEEE 802.11 "WiFi" technology) and CEN DSRC tolling have been thoroughly investigated in real-world measurements in ETSI studies – which is still not the case for Cellular-V2X or other 3GPP technology.

Cooperation between road operators and automotive industry

The successful cooperation between road operators and the automobile industry has resulted in the implementation of an effective mitigation method: Road operators announce their tolling locations through a geolocation database set up by **ASECAP** and/or ITS-G5 beacons specified in the **C-ROADS** profile, and already 1 Mio. vehicles implement the mitigation method specified in the profile of the **CAR 2 CAR Communication Consortium**. This results in a targeted reduction of transmissions just in a very close distance around tolling locations, while in the rest of the road network, ITS-G5 short range communication for C-ITS is not changed – maximising the benefits of both systems.

Real-world measurements of the operational system show the effective mitigation:



Further information:

- Short description of the ASECAP Protected Zone Database - https://c-its-deployment-group.eu/mission/statements/27-august-2020-asecap-maintains-protected-zone-database/
- C-ROADS C-ITS Roadside ITS-G5 System Profile 2.0.4 (Section 5.3.4) – Profiles available on request via https://www.c-roads.eu/platform/get-in-touch.html
- CAR 2 CAR Basic System Profile – Vehicle C-ITS station profile (RS_BSP_246, RS_BSP_458 etc.) https://www.car-2-car.org/documents/basic-system-profile