

Car Connectivity Consortium Response to TRAI spectrum consultation

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EXECUTIVE SUMMARY

The Car Connectivity Consortium (CCC) appreciates opportunity to submit their comments in response to the TRAI's consultation. UWB was mentioned by several stakeholders (BIF, ICEA, NXP Semiconductors, AMCHAM, MAI) and CCC would like to respond here. CCC is available to answer any questions related to this input.

THE CAR CONNECTIVITY CONSORTIUM

20

Countries

Our member companies represent many countries around the globe.

300

Member Companies

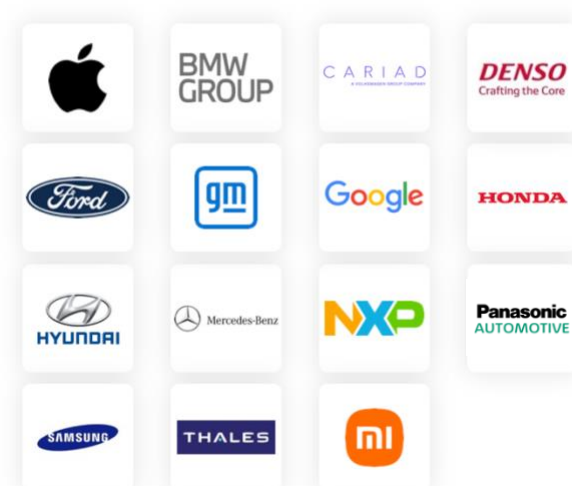
Over 300 global member companies from automotive, smart device, and technology industries.

2011

Founded

The CCC was founded to develop global standards and solutions for vehicle connectivity.

Charter Member Companies



The CCC, a cross-industry organization with over 300 member companies from the consumer electronics, automotive, and semiconductor sectors, has been at the forefront of driving the adoption of a secure and reliable connected ecosystem of vehicles and Smart devices with solutions that combine convenience, security, and privacy protections. With leading tech and automotive companies as part of its Board of Directors, the CCC has played a crucial role in advancing the integration of UWB technology into the automotive industry.

DIGITAL KEY ENABLED THROUGH UWB

UWB has become a critical enabler for secure car access solutions, with Car Connectivity Consortium (CCC) playing a pivotal role in its adoption. Since its introduction in 2017, UWB has maintained a reliable system level solution, providing robust protection against relay attacks, and withstanding the growing threat of cyber-attacks on the Vehicle access systems.

The release of the Digital Key Specification by CCC has been a significant milestone, allowing consumer electronic devices such as smartphones to act as vehicle keys. This standard offers enhanced security and privacy, while providing consumers with a convenient and consistent user experience across different manufacturers and operating systems.

As the demand for secure and seamless vehicle access solutions continues to grow, the role of UWB technology in enabling the CCC Digital Key and similar proprietary vehicle access systems have

become increasingly important. However, the access to the limited frequency band required for these applications faces potential challenges given WRC-27 Agenda Item 1.7 studies for IMT, which could impact the future deployment and adoption of UWB-based car access solutions.

CCC Response on WRC-27 Agenda Item 1.7

Q9. As the 7125-8400 MHz range in the 7 GHz band and the 14.8-15.35 GHz range in the 15 GHz band are being considered for IMT in WRC-27, whether there is a need to review the usage of 7 GHz and 15 GHz microwave backhaul bands at this stage itself, or should the review be undertaken after considering the outcome of WRC-27? Kindly provide a detailed response with justifications.

The frequency ranges of WRC-27 agenda Item 1.7, in particular 7 125-8 400 MHz, are covering the primary bands used for automotive UWB applications.

Today's vehicle buyers expect passive entry and start user experience. This requires determining the key location relative to the vehicle. Relay attacks to manipulate said key localization are prevented by time-of-flight (ToF) cryptographically secured distance measurements which can only be enabled by UWB technology. The smart device and automotive industry invested tremendously to bring the passive entry and start user experience known by classical key fobs to smart devices in a secure way by introducing UWB. Classical key fobs also rely on the same UWB ToF technology to prevent relay attacks. All major smart device and most vehicle manufactures have deployed and continue mass rollout of UWB in the field, and the ecosystem is continuously growing.

After the identification of the 6 GHz range for IMT Agenda Item 1.2 (WRC-23), the primary frequency range for vehicle access is now 7 125-8 400 MHz which is also part of WRC-27 Agenda Item 1.7, Res. 256 (WRC-23). The frequency overlap and IMT's high transmission power, jeopardizes the existing automotive UWB use cases, like Car Connectivity Consortium (CCC) Digital Key and relay attack protection for classical key fobs. In particular, CCC Digital Key primarily relies on UWB Channel 9 (7.7 – 8.3 GHz) to provide the features. The damaging effect of IMT in that frequency range has already be shown in PTA(23)[071 Annex 1](#). Moreover, an IMT identification will result in a total loss of investment in the current UWB-based CCC Digital Key technology. UWB devices can operate on a non-interference and non-protected basis with the existing spectrum framework and usage by other applications. With an introduction of IMT, UWB devices will not be able to operate anymore. This will risk the ongoing global mass deployment of UWB for automotive applications.

The unique characteristics of the UWB signal – allowing a detailed analysis of multipath and signal reflections – also makes it a candidate for sensing applications. A prominent example is “Child Presence Detection: After locking the vehicle the cabin is sensed for a child left behind, in order to warn the user and prevent heatstroke deaths of children. UWB provides the precision of a Radar technology, and allows for a sustainable implementation. Further functions based on UWB sensing technology are in development, like gesture detection (“Kick Sensor”) or intrusion detection. Market introduction is targeted for 2025 and beyond.

Furthermore, UWB is considered as a technology to cover white spots in vehicular tracking (e.g., navigation in garages or tunnels; automated valet parking) or Vulnerable Road User Protection (VRUP, e.g., collision avoidance with pedestrians).

UWB secure ranging is the enabling core technology for Digital Key, which operates at UWB Channel 9 (7.7 – 8.3 GHz).

The potential identification of these frequency bands for IMT poses a significant challenge that would impact existing and future deployment of UWB-based Vehicle access solutions.

The CCC kindly invites TRAI to consider existing UWB use cases (e.g., CCC Digital Key™) operating at 7.7 - 8.3 GHz (UWB CH9) as well as the future development as well as deployment of other UWB applications within the same band.

The CCC therefore would like to request to incorporate the “recognition” of the consumer value and benefit of existing and future UWB applications and services in any proposed revision to the existing regulatory framework towards a viable and future-proof solution.