**IEEE P802.19**

**Wireless Coexistence**

|  |  |  |
| --- | --- | --- |
| Project | IEEE P802.19 Wireless Coexistence WG | |
| Title | **Wireless Automotive Coexistence CSD** | |
| Date Submitted | 09/11/2016 | |
| Source | Igal Kotzer (General Motors)  Alaa Mourad (BMW) | E-mail: [igal.kotzer@gm.com](mailto:igal.kotzer@gm.com)  E-mail: [alaa.mourad@bmw.de](mailto:alaa.mourad@bmw.de) |
| Re: | [] | |
| Abstract | [] | |
| Purpose | [] | |
| Notice | This document has been prepared to assist the IEEE P802.19. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. | |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by IEEE P802.19. | |

**IEEE 802 LAN/MAN STANDARDS COMMITTEE (LMSC)**

**CRITERIA FOR STANDARDS DEVELOPMENT (CSD)**

Based on IEEE 802 LMSC Operations Manuals approved 7 November 2014

1. **IEEE 802 criteria for standards development (CSD)**

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

* 1. ***Project process requirements***
     1. Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

1. The definitions will be part of this project. Yes
2. The definitions will be part of a different project and provide the plan for that project or anticipated future project.
3. The definitions will not be developed and explain why such definitions are not needed.

**Intended plan for developing a definition of managed objects:**

* Quantify the degradation that dense multi networks cause to each other based on a defined set of measures.
* Understand the root causes of the degradation in each of the measures.
* Identify parameters in the standards that can alleviate or remove the degradations.
* Recommend a full set of parameters per a vehicular scenario.
  + 1. Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

1. Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) No
2. If not, explain why the CA document is not applicable.

This standard practice will enhance coexistence for wireless devices in a vehicular environment. Evaluation of the effectiveness of coexistence will be done during recommendation development. Since this recommended practice is based on existing standards and aims to better tune their parameters, the group will not produce a CA document.

* 1. ***5C requirements***
     1. Broad market potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

1. Broad sets of applicability.

IEEE 802.11 systems have migrated into the vehicular environment very quickly in the recent years. Vehicle passengers expect to have seamless integration of their consumer electronic devices in their vehicles. Driven by passenger demand, OEMs and other stakeholders are assigning great importance to the wireless applications in vehicles.

According to research by Isuppli, IEEE 802.11 devices will be integrated in 7.2 million vehicles by 2017. On the other hand, in-vehicle applications and services will be valued at more than $1.2 billion by 2017, due to the increased number of connected vehicles (*source:* Connected Cars: Vehicular Telematics & In-Vehicle Infotainment 2013-2017, Juniper research).

In addition, Bluetooth plays a big role in vehicle infotainment systems, and it has been integrated in most vehicles to provide connectivity to personal devices for applications such as hands free calling and music streaming.

1. Multiple vendors and numerous users.

Numerous vendors currently build many products for the Wireless Local Area Networks (WLAN) marketplace in the vehicular domain. The big stakeholders are both the Tier 1 and Tier 2 suppliers as well as the semiconductor companies. This work potentially affects all vehicle users.

* + 1. Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

1. Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q? Yes
2. If the answer to a) is no, supply the response from the IEEE 802.1 WG.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

* + 1. Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

This recommended practice defines a set of parameter values that is unique to the vehicular environment.

* + 1. Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

1. Demonstrated system feasibility.

Earlier studies have shown that power control as well as dynamic channel selection have significantly improved performance. This recommended practice is merely identifying the right set of parameter values for each existing standard such that it operates to its full potential in the vehicular environment.

1. Proven similar technology via testing, modeling, simulation, etc.

Same as 1.2.4 a) and extensive existing knowledge of coexistence techniques will be applied to develop the coexistence standard.

* + 1. Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

1. Balanced costs (infrastructure versus attached stations).

Since there are no added hardware costs, the balance remains unchanged

1. Known cost factors.

Same as 1.2.5 a).

1. Consideration of installation costs.

This amendment will not introduce additional installation cost.

1. Consideration of operational costs (e.g., energy consumption).

This amendment will not introduce additional operational costs.

1. Other areas, as appropriate.

None.