IEEE P802.11
Wireless LANs

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| 802.11 NGV Proposed PAR |
| Date: 2018-05-08 |
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Abstract

This submission includes the IEEE 802.11 Next Generation V2X Study Group Project Authorization Request.

# PAR

**P802.11**

**Submitter Email: sun.bo1@zte.com.cn**
**Type of Project:** Amendment to IEEE Standard 802.11
**PAR Request Date:** TBD
**PAR Approval Date:
PAR Expiration Date:
Status:** Unapproved PAR, PAR for an amendment to an existing IEEE Standard

**1.1 Project Number:** P802.11tbd
**1.2 Type of Document:** Standard
**1.3 Life Cycle:** Full Use

**2.1 Title:** Standard for Information technology--Telecommunications and information exchange between systems Local and metropolitan area networks--Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications-- Amendment: Enhancements for Next Generation V2X

**3.1 Working Group:** Wireless LAN Working Group (C/LM/WG802.11)
**Contact Information for Working Group Chair**

**Name: Dorothy Stanley**
**Email Address:** dstanley1389@gmail.com
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**Contact Information for Working Group Vice-Chair Name:** Jon Rosdahl
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**3.2 Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
**Contact Information for Sponsor Chair**

**Name:** Paul Nikolich
**Email Address:** p.nikolich@ieee.org
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**Contact Information for Standards Representative Name:** James Gilb
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**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot:**September, 2020
**4.3 Projected Completion Date for Submittal to RevCom:**September, 2021

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 100

**5.2.a. Scope of the complete standard:** The scope of this standard is to define one medium access control (MAC) and several physical layer (PHY) specifications for wireless connectivity for fixed, portable, and moving stations (STAs) within a local area.

**5.2.b. Scope of the project:**

This amendment defines modifications to both the IEEE 802.11 physical layers (PHY) and the IEEE 802.11 Medium Access Control layer (MAC) for vehicles to everything (V2X) communcations, with at least one mode that achieves at least 2 times higher throughput (measured at the MAC data service access point) than in IEEE Std 802.11-2016 operating at maxmium mandatory\* MCS as defined in 5.9GHz band\*\*, in high mobility channel environments at speeds up to 250 km/h; and also with at least one mode that achieves at least 3dB lower sensitivity level (longer range), than that of the lowest rate defined in IEEE Std 802.11-2016 operating in 5.9GHz band.

This amendment defines operations in the 5.9GHz band, as defined in clauses E.2.3 and E.2.4 in IEEE Std 802.11-2016.

This amendment shall define at least one operation mode that achieves 2 times higher average throughput per station in high density scenarios such as urban congested roads, from IEEE Std 802.11-2016 operating in 5.9GHz band.

The amendment shall enable backward compatibility\*\*\* and coexistence with legacy devices that are only compliant to IEEE Std 802.11-2016 operating in 5.9GHz band.
 **5.3 Is the completion of this standard dependent upon the completion of another standard: NO**

 **5.4 Purpose:** The purpose of this standard is to provide wireless connectivity for fixed, portable, and moving stations within a local area. This standard also offers regulatory bodies a means of standardizing access to one or more frequency bands for the purpose of local area communication.

**5.5 Need for the Project:**

Current wireless access in vehicular environments (WAVE) technology for V2X applications is based on IEEE Std 802.11-2016 operating in 5.9GHz band which was derived from the OFDM PHY as defined in clause 17 of IEEE Std 802.11-2016 (a.k.a. IEEE 802.11a amendment). The technology has been available for almost a decade, and has been extensively tested and is a proven, mature technology.

During the past decade, IEEE 802.11 technology has improved, from the IEEE 80211a amendment, to IEEE 802.11n amendment , IEEE 802.11ac amendment and the ongoing IEEE P802.11ax amendment, with supported throughput increasing from 54 Mbps to close to 10 Gbps, as well as higher reliability and range. To address future needs for V2X communication technology and provide 802.11-based future-proof technology for V2X applications, the definition of new mechamisms for IEEE 802.11 V2X applications, based on new and existing, proven WLAN PHY/MAC technologies, is needed.

 **5.6 Stakeholders for the Standard:**Manufacturers and users of semiconductors, vehicle vendors and their component providers, consumer electronic devices, mobile devices, and road side infrastructures.

**Intellectual Property:
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No**

**6.1.b. Is the Sponsor aware of possible registration activity related to this project?:** Yes

* 1. **Are there other standards or projects with a similar scope?:** No

**7.2 Joint Development**
**Is it the intent to develop this document jointly with another organization?:** No

**8.1 Additional Explanatory Notes (Item Number and Explanation)**

\* The maxmium mandatory MCS refers to 12 Mbps as defined in IEEE Std 802.11-2016 operating operating in 5.9 GHz.

\*\* 2 times higher throughput also implies that the new amendment achieves higher reliability with the same or similar throughput in high mobility environments, than the legacy devices compliant to IEEE Std 802.11-2016 operating in 5.9GHz band.

\*\*\* Backward compatibility with legacy devices means that the devices compliant to the new amendment shall be able to decode the packets sent by the legacy devices, and the operation of those legacy devices shall not be affected in the presence of the devices compliant to this new amendment.

**References:**