IEEE P802.11
Wireless LANs

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| 802.11 SENS SG Proposed PAR |
| Date: 2019-12-03 |
| Author(s): |
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Abstract

This submission includes the IEEE 802.11 WLAN Sensing (SENS) Study Group proposed PAR.

**P802.11**

**Submitter Email:**

**Type of Project:** Amendment to IEEE Standard 802.11-2016

**PAR Request Date:**

**PAR Approval Date:**

**PAR Expiration Date:**

**Status:** Unapproved PAR, PAR for an amendment to an existing IEEE Standard

**1.1 Project Number:**

**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 WLAN Sensing

**3.1 Working Group:** Wireless LAN Working Group (C/LM/WG802.11)

**Contact Information for Working Group Chair**

**Name:** Dorothy Stanley

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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

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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:**

**4.3 Projected Completion Date for Submittal to RevCom**

**Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.:**

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 60

**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 the IEEE 802.11 medium access control layer (MAC), to the physical layers (PHY) of High Throughput (HT), Very High Throughput (VHT), and Directional Multi Gigabit (DMG), and to PHYs under concurrent development (specifically, High Efficiency WLAN (HEW), Next Generation 60 GHz (NG60), and Extremely High Throughput (EHT)), including enhancements introduced in IEEE P802.11az, that enhance WLAN sensing operation in the 2.4 GHz/5 GHz/6 GHz bands and in license-exempt bands above 45 GHz. This amendment shall provide backward compatibility and coexistence with legacy IEEE 802.11 devices operating in the same band.

This amendment defines at least one mode that enables stations (STAs) to perform one or more of the following: To exchange WLAN sensing capabilities, to request and setup transmissions that allow for WLAN sensing measurements to be performed, to indicate that a transmission may be used to perform WLAN sensing measurements, and to exchange WLAN sensing feedback and information. This amendment defines WLAN sensing operation that relies on transmissions that are requested, unsolicited, or both. This amendment also defines an interface for applications above the MAC to request and obtain WLAN sensing-related information, such as WLAN sensing measurements. This amendment may also define modifications that enable secured exchange of WLAN sensing feedback and information.

**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:**

WLAN sensing is the use of 802.11 technology to enable applications such as presence and proximity detection, gesture recognition, wellness monitoring, localization, and smart home, among others, in scenarios such as residential, enterprise, indoor, and outdoor. WLAN sensing is performed by processing transmissions of one or more STAs and detecting variations that could indicate an event of interest. Target subjects of WLAN sensing could be people, animals, or objects, among others, and are assumed to not make transmissions that could be used by WLAN sensing. Research on WLAN sensing has been ongoing at least since the early 2000s, and its feasibility has been independently demonstrated by different groups. The reliability and efficiency of WLAN sensing applications can be enhanced, compared to what can be achieved with the use of IEEE 802.11-2016, by defining standard support to WLAN sensing-specific operations, including the exchange of WLAN sensing capabilities and the coordination of transmissions used to obtain WLAN sensing measurements. To better support WLAN sensing, spur further innovation¸ and provide a technology development roadmap to the industry an amendment to IEEE 802.11-2016 that addresses unique characteristics of WLAN sensing is needed.

**5.6 Stakeholders for the Standard:** Manufacturers and users of semiconductors, personal computers, enterprise networking devices, consumer electronic devices, home networking equipment, mobile devices, wireless sensing equipment (including for behavior recognition, vehicular, smart home, and security applications), and test and measurement equipment providers.

**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?:** No

**7.1 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:** 5.2.b:

\* This amendment will be evaluated in a set of typical deployment scenarios (residential, enterprise, indoor, and outdoor, for example) applicable to the main expected applications (such as presence and proximity detection, gesture recognition, wellness monitoring, localization, and smart home, among others).

\* The operating frequency bands to be considered in this amendment are defined in Annex E of IEEE 802.11-2016, IEEE P802.11ax/D5.1, IEEE P802.11ay/D5.0, and IEEE P802.11-REVmd/D3.0.