P802.11bp

Type of Project: Amendment to IEEE Standard 802.11-2020
Project Request Type: Initiation / Amendment
PAR Request Date: 29 Jan 2024
PAR Approval Date:
PAR Expiration Date:
PAR Status: Submitted
Root Project: 802.11-2020

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

2.1 Project Title: IEEE 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 Ambient Power Communication (AMP)

3.1 Working Group: Wireless LAN Working Group(C/LAN/MAN/802.11 WG)
3.1.1 Contact Information for Working Group Chair:
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3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LAN/MAN)
3.2.1 Contact Information for Standards Committee 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 Standards Committee Ballot: Mar 2026
4.3 Projected Completion Date for Submittal to RevCom: Dec 2026

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 Medium Access Control layer (MAC) and Physical Layers (PHY) to enable operation of an Ambient Power communication (AMP) station (STA) that is powered using energy harvesting.

Operation in sub-1 Gigahertz (GHz) and 2.4 GHz is defined. Specifically, at least one mode of data communication in sub-1 GHz band is defined and at least one mode of data communication in 2.4 GHz band with the AMP communication access category (AC) being set to AC_BK (background) is defined.

This amendment defines mechanisms for coexistence of an AMP STA and deployed STAs compliant with IEEE Std 802.11™-2020 that operate in the same radio frequency band as the AMP STA.

5.3 Is the completion of this standard contingent 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 Local Area Network (WLAN) applications based on IEEE 802.11 technology have been deployed in many market segments, including the traditional consumer electronic market and the ever-growing Internet of Things (IoT) market. Legacy IoT devices are usually powered using batteries with a limited lifespan, which can significantly affect user experience in a negative way. The astronomical growth of IoT networks together with the advent of a huge amount of IoT devices has pushed the limits of maintenance expenditures, including both labor and battery costs, to a whole new level. An IEEE 802.11 based WLAN IoT network is competitive from the perspective of deployment cost, due to an already widespread deployment and use of the unlicensed frequency band.

However, there are still many use cases and applications that cannot be addressed using existing IEEE 802.11 based WLAN IoT technologies due to requirements for maintenance-free operation, ultra-low complexity, very small size, very long lifecycle, and the limitations of conventional batteries.

Ambient power communication is a promising technology to enable battery-free communication and meet the requirements for new applications in various vertical markets. The operation of such technology relies on the energy harvested from a variety of sources including radio waves, light (sunlight), motion, and heat, so that the conventional battery can be removed. To address future applications supporting ambient power communication in WLAN and to provide 802.11-based future-proof technology for AMP IoT applications, the definition of ambient power communication based on new and existing, proven IEEE 802.11 WLAN PHY/MAC technologies is needed.

5.6 Stakeholders for the Standard: The stakeholders of this standard are the developers and users of the Wireless LAN devices, including wireless network access service providers, manufacturers, health care workers, retail service providers, and many others.

Stakeholders also include semiconductor manufacturers and users of semiconductors, component providers, consumer electronic and mobile devices vendors, IoT devices vendors, and IoT network operators.

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project?
No

6.1.2 Is the Standards Committee 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 Is it the intent to develop this document jointly with another organization? No

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8.1 Additional Explanatory Notes: 5.2.b IEEE Std 802.11™-2020 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.