IEEE P802.11  
Wireless LANs

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| 802.11 ELC Proposed PAR | | | | |
| Date: 2024-09-10 | | | | |
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Abstract

PAR draft document for Enhanced Light Communications.

# PAR

**P802.11**

**Submitter Email:**   
**Type of Project:** Amendment to IEEE Standard 802.11  
**PAR Request Date:** TBD  
**PAR Approval Date: November 2024  
PAR Expiration Date: November 2028  
Status:** Unapproved PAR, PAR for an amendment to an existing IEEE Standard

**1.1 Project Number:** P802.11br?  
**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 Integrated mmWave (IMMW) WLAN

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

**Contact Information for Working Group Chair**

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**3.2 Sponsoring Society and Committee:** IEEE Computer Society/LAN/MAN Standards Committee (C/LM)

**Contact Information for Sponsor Chair**

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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:**November 2026  
**4.3 Projected Completion Date for Submittal to RevCom:  
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.:** March 2028

**5.1 Approximate number of people expected to be actively involved in the development of this project:** 20

**5.2.a. Scope of the complete standard:** The scope of this standard is to define one medium access control (MAC) and one 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 specifies a new PHY layer and modifications to the IEEE 802.11 MAC that enhance light communications (ELC).

This amendment specifies a PHY that:

1. May introduce new channelization in the electrical domain that enhance operations in 800 nm to 1,000 nm band
2. May extend operations to a new optical domain 400 – 500 nm and 1200 – 1600 nm
3. Alignment with the latest IEEE 802.11 amendments such as 11be, 11bn, and 11bq (IMMW)
4. Enhance use of wavelength division multiplexing
5. Expands the multi-link operation defined in the sub-7 GHz band specifications to also support non-standalone operation in the optical spectrum
6. May introduce simpler integration of the IEEE 802.11 baseband with optical frontends
7. **May introduce techniques to reduce the peak-to-average-power ratio**

Feature changes relevant to LC shall be limited to Clause 33 in the current IEEE 802.11 document and relevant sections that define the reuse of existing PHY and MAC specifications.

This amendment shall ensure coexistence with legacy IEEE 802.11 devices operating in the identified unlicensed bands.

**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:**

The release of IEEE 802.11bb amendment created a baseline standard for the use of IEEE 802.11 technology in the optical spectrum. IEEE 802.11bb compliant devices have been introduced with several organizations developing prototypes and products. The amendment enabled the use of IEEE 802.11n, IEEE 802.11ac and IEEE 802.11ax standards in the optical domain. New features defined in the latest series of IEEE 802.11 amendments have been requested by various customer. This project aims to support those requests and ensure that the latest generation of IEEE 802.11 systems have an industry standard to operate in the optical spectrum.

**5.6 Stakeholders for the Standard:**Manufacturers and users of semiconductors, personal computers, enterprise networking devices, consumer electronic devices, home networking equipment, mobile devices, and cellular operators.

**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?: Yes**

IEEE 802.11bb

IEEE 802.15.7

IEEE 802.15.13

**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):**

5.2.b LC systems are expected to adhere to regulation and standards such as IEC 62471:2006-"Photobiological safety of lamps and lamp systems" as well as ITU-T G.664 - "Optical Safety Procedures and Requirements for Optical Transmission Systems" and others. In addition, LC systems are expected to not create any additional electromagnetic interference.

**References:**