IEEE P802.11
Wireless LANs

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| 802.11 ELC Proposed PAR |
| Date: 2024-01-16 |
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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: March 2025
PAR Expiration Date: December 2029
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: Enhanced Light Communications Wireless LAN

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

**Contact Information for Working Group Chair**

**Name: Robert Stacey**

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

**3.2.1 Contact Information for Standards Committee Chair:
Name:** James Gilb **Email Address:** gilb\_ieee@tuta.com **3.2.2 Contact Information for Standards Committee Vice Chair:
Name:** David Halasz **Email Address:** dave.halasz@ieee.org **3.2.3 Contact Information for Standards Representative:
Name:** George Zimmerman **Email Address:** george@cmephyconsulting.com

**4.1 Type of Ballot:** Individual
**4.2 Expected Date of submission of draft to the IEEE-SA for Initial Standards Committee 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 provides enhanced light communications (ELC) for Wireless LAN operation. The amendment introduces a new ELC PHY through the modification of existing IEEE Std 802.11 sub-7.25 GHz PHYs. These modifications are limited to specifying:

1. Operations in new optical bands in the range of 400 nm to 600 nm and 1200 nm to 1600 nm
2. New channelization
3. The use of wavelength division multiplexing (WDM)
4. Simpler integration of the IEEE Std 802.11 baseband with optical frontends
5. PHY support for existing ranging techniques
6. Methods to reduce the peak-to-average-power ratio

This amendment modifies the IEEE Std 802.11 MAC to support the ELC PHY and multi-link operation.

This amendment provides for compatibility with legacy IEEE Std 802.11 devices operating in the identified optical 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 IEEE Std 802.11bb standard extended the operation of IEEE Std 802.11 into the optical spectrum. IEEE Std 802.11bb compliant devices have been introduced with several organizations developing prototypes and products. The amendment enabled the use of IEEE Std 802.11n, IEEE Std 802.11ac and IEEE Std 802.11ax standards in the optical domain. New features defined in the latest series of IEEE Std 802.11 amendments have been requested by various customers. These changes, including reducing the power consumption and increasing the range of LC devices, aim to expand the market and address a wider range of applications. This project aims to support those customer requests and ensure that the latest generation of IEEE Std 802.11 systems have an up-to-date 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?: 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):**

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", IEC 60825-1:2014 – “Safety of laser products – Part 1: Equipment classification and requirements.” and others. In addition, LC systems are expected to not create additional electromagnetic interference in accordance with national regulation standards.

**References:**