IEEE P802.11
Wireless LANs

|  |
| --- |
| 802.11 ELC Proposed PAR |
| Date: 2024-11-11 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Nikola Serafimovski  | pureLiFi Ltd.  |  |  |  nikola.serafimovski@purelifi.com |
| Mostafa Afgani | pureLiFi Ltd. |  |  | mostafa.afgani@purelifi.com |
| Mohamed Islim | pureLiFi Ltd. |  |  | mohamed.islim@purelifi.com |
| Cheng Chen  | pureLiFi Ltd. |  |  | cheng.chen@purelifi.com |
| Volker Jungnickel | Fraunhofer HHI |  |  | volker.jungnickel@hhi.fraunhofer.de  |
| Stefan Videv | Kyocera SLD Laser |  |  | svidev@kyocera-sldlaser.com  |
| Sovan Das | Kyocera SLD Laser |  |  | sdas@kyocera-sldlaser.com |

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: Enhancements for Integrated mmWave (IMMW) WLAN

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

**Contact Information for Working Group Chair**

**Name: Robert Stacey**

**Email Address:** robert.stacey@intel.com
**Phone:** +1-503-724-0893

**Contact Information for Working Group Vice-Chair**

**Name:** Jon Rosdahl
**Email Address:** jrosdahl@ieee.org
**Phone:** 801-492-4023

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

**Contact Information for Sponsor Chair**

**Name:** James Gilb
**Email Address: gilb@ieee.org**
**Phone:** +1-858-229-4822

**Contact Information for Standards Representative**

**Name:**  ???
**Email Address:**  ???
**Phone:**  ???

**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 provides enhanced light communications (ELC) by modifying the light communications (LC) IEEE 802.11 physical layer (PHY) and introducing a new ELC PHY. The amendment also modifies the IEEE 802.11 medium access control (MAC) to support LC.

This amendment:

1. Extends operations to new optical bands in the range of 400 nm to 600 nm and 1200 nm to 1600 nm
2. Defines new channelization
3. Enhances the use of wavelength division multiplexing (WDM)
4. Defines simpler integration of the IEEE 802.11 baseband with optical frontends
5. Extends multi-link operation to support optical bands
6. Provides PHY support for existing ranging techniques
7. Defines techniques to reduce the peak-to-average-power ratio

This amendment provides for compatibility with legacy IEEE 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 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 customers. These changes 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 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?: 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", 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:**