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**P802.15.7a**

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This PAR is valid until 31-Dec-2024.

**PAR Extension Request Date:**  
**PAR Extension Approval Date:**  
**Number of Previous Extensions Requested:** 0

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- 1. Number of years that the extension is being requested:** 1
- 2. Why an Extension is Required (include actions to complete):** To complete SA Ballot and RevCom approval
- 3.1. What date did you begin writing the first draft:** 25 Jan 2022
- 3.2. How many people are actively working on the project:** 10
- 3.3. How many times a year does the working group meet?**  
In person: 6  
Via teleconference:
- 3.4. How many times a year is a draft circulated to the working group:** 3
- 3.5. What percentage of the Draft is stable:** 97%
- 3.6. How many significant work revisions has the Draft been through:** 8
- 4. When will/did initial Standards Association Balloting begin:** Dec 2023

**When do you expect to submit the proposed standard to RevCom:** Sep 2024  
**Has this document already been adopted by another source? (if so please identify)** No

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For an extension request, the information on the original PAR below is not open to modification.

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**Type of Project:** Amendment to IEEE Standard 802.15.7-2018  
**Project Request Type:** Initiation / Amendment  
**PAR Request Date:** 13 Aug 2020  
**PAR Approval Date:** 24 Sep 2020  
**PAR Expiration Date:** 31 Dec 2024  
**PAR Status:** Active  
**Root Project:** 802.15.7-2018

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**1.1 Project Number:** P802.15.7a  
**1.2 Type of Document:** Standard  
**1.3 Life Cycle:** Full Use

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**2.1 Project Title:** Standard for Local and Metropolitan Area Networks - Part 15.7: Short-Range Optical Wireless Communications  
Amendment: Higher Speed, Longer Range Optical Camera Communication (OCC)

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**3.1 Working Group:** Wireless Specialty Networks (WSN) Working Group(C/LAN/MAN/802.15 WG)

**3.1.1 Contact Information for Working Group Chair:**

**Name:** Clinton Powell

**Email Address:** cpowell@ieee.org

**3.1.2 Contact Information for Working Group Vice Chair:**

**Name:** PHILIP E BEECHER

**Email Address:** phil@beecher.co.uk

**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:** 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

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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:**

**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:** This standard defines a Physical (PHY) and Media Access Control (MAC) layer for short-range optical wireless communications in optically transparent media using light wavelengths from 10 000 nm to 190 nm. The standard is capable of delivering data rates sufficient to support audio and video multimedia services and also considers mobility of the optical link, compatibility with various light infrastructures, impairments due to noise and interference from sources like ambient light and a MAC layer that accommodates the unique needs of visible links as well as the other targeted light wavelengths. It also accommodates optical communications for cameras where transmitting devices incorporate light emitting sources and receivers are digital cameras with a lens and image sensor. The standard adheres to applicable eye safety regulations.

**Change to scope of the complete standard:** This standard defines a ~~physical layer~~ Physical (PHY) and ~~medium~~ Media access Access control Control (MAC) ~~sublayer~~ layer for short-range optical wireless communications ~~(OWC)~~ in optically transparent media using light wavelengths from 10 000 nm to 190 nm. The standard is capable of delivering data rates sufficient to support audio and video multimedia services and also considers mobility of the optical link, compatibility with various light infrastructures, impairments due to noise and interference from sources like ambient light ~~—~~ and a MAC ~~sublayer~~ layer that accommodates the unique needs of visible links as well as the other targeted light wavelengths. It also accommodates optical communications for cameras where transmitting devices incorporate light ~~—~~emitting sources and receivers are digital cameras with a lens and image sensor. The standard adheres to applicable eye safety regulations.

**5.2.b Scope of the project:** This amendment defines a high-rate Optical Camera Communications (OCC) Physical Layer (PHY) using light wavelengths from 10 000 nm to 190 nm in optically transparent media. It is capable of delivering data rates up to 100 Mb/s and is designed for point-to-point and point-to-multipoint communication. Adaptation to varying channel conditions and maintaining connectivity during high mobility (speeds up to 350 km/h), flicker mitigation, RF co-existence, and a communication range of up to 200 m, are included. MIMO (e.g. MIMO-OFDM) is utilized to deal with high-levels of optical interference while maintaining high-rate data transmission. Relaying mechanisms are included enabling heterogeneous operation with existing RF wireless data communications standards. The Amendment adheres to applicable eye safety regulations.

**5.3 Is the completion of this standard contingent upon the completion of another standard?** No

**5.4 Purpose:** This document will not include a purpose clause.

**Change to Purpose:** ~~This standard provides a global standard for short-range OWC. The standard provides the following: Access to several hundred terahertz of unlicensed spectrum. Immunity to electromagnetic interference and noninterference with radio frequency systems. For visible light systems, additional security by allowing the user to see the communication channel, Communication augmenting and complementing existing services (e.g., illumination, display, indication, decoration).~~

**5.5 Need for the Project:** Given the growing need for ubiquitous wireless connectivity in high mobility environments, the need for unlicensed, high bandwidth, easy-to-use wireless communications technology, immune to RF interference and which does not overload existing RF spectrum or necessarily require additional hardware, has never been greater. This amendment specifically addresses these needs. In particular, OCC based Optical Wireless Communications (OWC) solutions to this problem address a significant opportunity, extending to billions of existing communication devices, providing secure, non RF based communications between industrial devices and/or between consumer devices and fixed infrastructure on a one to one, or one to many or many to one basis at acceptable data rates. Potential applications include Advanced Driver Assistance Systems (ADAS), Vehicle-to-everything (V2X) communication, control of mobile robots in manufacturing cells or on assembly lines, automated guided vehicular systems, collision avoidance in V2X or drone networks, small cell backhaul, patient monitoring in hospitals, security monitoring in manufacturing factories and petrochemical plants, secure communications in nuclear facilities, etc. There is also a similar emerging need in commercial/business settings, especially in environments requiring high data rates and high levels of security.

**5.6 Stakeholders for the Standard:** Automotive manufacturers, locomotive manufacturers, ship manufacturers, drone and aircraft manufacturers, robot manufacturers, logistics companies, industrial devices manufacturers, system integrators, medical equipment manufacturers, lighting manufacturers, silicon providers, chemical manufacturers, networking equipment manufacturers, academic researchers and end users.

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**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

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**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:**