

P802.15.7

Submitter Email: bheile@ieee.org

Type of Project: Revision to IEEE Standard 802.15.7-2011

PAR Request Date: 05-Nov-2014

PAR Approval Date:

PAR Expiration Date:

Status: Unapproved PAR, PAR for a Revision to an existing IEEE Standard

1.1 Project Number: P802.15.7

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Title: Short-Range Wireless Optical Communication

Changes in title: ~~IEEE Standard for Local and Metropolitan Area Networks—Part 15.7: Short-Range Wireless Optical Communication~~
Using Visible Light

3.1 Working Group: Wireless Personal Area Network (WPAN) Working Group (C/LM/WG802.15)

Contact Information for Working Group Chair

Name: Robert Heile

Email Address: bheile@ieee.org

Phone: 781-929-4832

Contact Information for Working Group Vice-Chair

Name: PATRICK KINNEY

Email Address: pat.kinney@kinneyconsultingllc.com

Phone: 847-960-3715

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

Contact Information for Sponsor Chair

Name: Paul Nikolich

Email Address: p.nikolich@ieee.org

Phone: 857.205.0050

Contact Information for Standards Representative

Name: James Gilb

Email Address: gilb@ieee.org

Phone: 858-229-4822

4.1 Type of Ballot: Individual

4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 11/2016

4.3 Projected Completion Date for Submittal to RevCom: 05/2017

5.1 Approximate number of people expected to be actively involved in the development of this project: 25

5.2 Scope: This standard defines a PHY and 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.

Changes in scope: This standard defines a PHY and MAC layer for short-range optical wireless communications ~~using visible light~~ in optically transparent media. ~~The~~using visible light spectrum ~~wavelengths~~ extends from ~~380~~10,000 nm to ~~780~~190 nm ~~in wavelength~~. The standard is capable of delivering data rates sufficient to support audio and video multimedia services and also considers mobility of the ~~visible~~optical link, compatibility with ~~visible~~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.

5.3 Is the completion of this standard dependent upon the completion of another standard: No

5.4 Purpose: This standard provides a global standard for short-range optical wireless communication. The standard provides (i) access to several hundred THz of unlicensed spectrum; (ii) immunity to electromagnetic interference and noninterference with Radio Frequency (RF) systems; (iii) for visible light systems, additional security by allowing the user to see the communication channel; and (iv) communication augmenting and complementing existing services (such as illumination, display, indication, decoration, etc.).

Changes in purpose: ~~The This purpose of this standard is provide to provide a global standard for short-range optical wireless communication using visible light. The standard provides (i) access to several hundred THz of unlicensed spectrum; (ii) immunity to electromagnetic interference and noninterference with Radio Frequency (RF) systems; (iii) for visible light systems, additional security by allowing the user to see the communication channel; and (iv) communication augmenting and complementing existing services (such as illumination, display, indication, decoration, etc.) from visible light infrastructures.~~

5.5 Need for the Project: Optical Wireless Communications is drawing great interest as a wireless communications approach due to the following recent developments. Firstly, solid-state light sources are rapidly replacing conventional ones in signaling, illumination and display infrastructures. It thus becomes possible to carry communication data on such light sources. Secondly, light as a communications medium is free from frequency regulation and Radio Frequency (RF) interference so that it is well suited to RF crowded or RF restricted environments. Thirdly, for visible light systems, the unique feature of visibility can enhance the physical-layer security and offer intuitive usage.

Given the growing expectation of ubiquitous connectivity in all settings and environments, the need for unlicensed, high bandwidth, easy to use wireless communications technology, which does not overload existing RF spectrum or necessarily require additional hardware. has never been greater.

Potential applications include secure point-to-point communication, indoor Location Based Service (LBS), Optical Communications for Cameras (OCC), secure point-to-Multipoint communication (office, hospital, airplane), Intelligent Transportation System (ITS), information broadcast, etc.

In particular, OCC based solutions to this problem address a significant opportunity, extending to billions of existing devices, to provide secure non Radio Frequency (RF) based communications capability between devices and/or between devices and fixed infrastructure on either a one to one, or one to many or many to one basis. The ability to use existing or minimally modified hardware for many applications contains the cost and leverages a large installed base.

5.6 Stakeholders for the Standard: Mobile Communications Device Manufacturers and Users, Camera Manufacturers, Lighting Manufacturers, Location Based Services Suppliers and Users, Component Suppliers, other Service Providers, Infrastructure 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):