**IEEE P802.15**

**Wireless Personal Area Networks**

|  |  |
| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | New amendment for enhanced privacy for IEEE 802.15.4-2020 |
| Date Submitted | [16-Jan-2023] |
| Source | [Tero Kivinen][] | Voice: [Deprecated]Fax: [Deprecated]E-mail: [kivinen@iki.fi] |
| Re: |  |
| Abstract | [CSD for privacy] |
| Purpose | [CSD and PAR development] |
| Notice | This document has been prepared to assist the IEEE P802.15. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
| Release | The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15. |

CRITERIA FOR STANDARDS DEVELOPMENT (CSD)

Based on IEEE 802 LMSC Operations Manuals approved 13 November 2015

Last edited 3 December 2015

 **Title:**

IEEE Standard for

Enhanced Privacy for IEEE Std 802.15.4-2020

# IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the Sponsor that provides a description of the project and the Sponsor's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

## Project process requirements

### Managed objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

1. The definitions will be part of this project. No
2. The definitions will be part of a different project and provide the plan for that project or anticipated future project.
3. The definitions will not be developed and explain why such definitions are not needed.

###  Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

1. Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) No
2. If not, explain why the CA document is not applicable.

## 5C requirements

### Broad market potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

1. Broad sets of applicability.

Currently the 802.15.4 standard is extensively implemented for an increasingly diverse range of applications including low complexity, very low cost, very low power consumption, and low data rate wireless connectivity among inexpensive devices, especially targeting the communications requirements of what is now commonly referred to as the Internet of Things. 802.15.4 specifies a range of PHYs which are suitable for vastly different applications.

User privacy has been an increasing area of focus in the wireless marketplace. Smartphones, for example have been starting to include IEEE Std 802.15.4 radios in them, and this trend seems to be continuing. Because of this, enhancing the privacy of the IEEE Std 802.15.4-2020 is needed.

The set of interested parties is not confined to mobile device manufacturers and users. At the same time, static infrastructure that mobile devices are connected to might need some understanding about randomized addresses to cope with them.

This project builds upon the existing standard, simplifying use of the standard to enable further adoption.

1. Multiple vendors and numerous users.

802.15.4 has been extensively adopted. The existing standard is used by a number of industry alliances, including ISA100, Profibus & Profinet International / omlox, Thread, Wi-SUN, Connectivity Standards Alliance (CSA), the Connected Car Consortium (CCC), Fine Ranging Consortium (FiRa), and the UWB Alliance. There are hundreds of vendors of 802.15.4 products and solutions. The number of deployed devices is estimated in the 100s of millions and this figure continues to grow. The enhancements included in this project are implementable by many of these existing vendors and will attract many new vendors supporting many different user communities.

### Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

1. Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?

No. While the amendment shall comply with IEEE Std 802, it cannot comply with IEEE Std 802.1Q and IEEE Std 802.1AC because IEEE Std 802.15.4 uses 64-bit MAC addresses.

1. If the answer to a) is no, supply the response from the IEEE 802.1 WG.

Compliance with IEEE Std 802.1Q and IEEE Std 802.1AC is not possible due to IEEE Std 802.15.4 using 64-bit MAC addresses

* + 1. Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

There is no other project working on privacy of the IEEE Std 802.15.4-2020.

### Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

1. Demonstrated system feasibility.

The existing 802.15.4 PHYs have been implemented in volume and widely deployed in many applications, demonstrating feasibility and value. The privacy enhancements like randomized and changing addresses have already been implemented on other standards like IEEE Std 802.11, and this standards learns from those other projects.

1. Proven similar technology via testing, modeling, simulation, etc.

Any enhancements created by this project will have been proven by implementation, testing and demonstration in existing standards-based and non-standards-based products, prototypes, and demonstration systems. This project brings these proven capabilities into the standard in a way compatible with existing standards-based solutions.

### Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:

1. Balanced costs (infrastructure versus attached stations).

The proposed new standard consolidates the PHYs and applicable MAC functionality in 802.15.4 and does not add any significant cost to either the infrastructure or the attached stations.

1. Known cost factors.

 The standard is built upon 802.15.4 which has been widely deployed at reasonable costs.

1. Consideration of installation costs.

There are no or at most minimal additional costs associated with installation.

1. Consideration of operational costs (e.g., energy consumption).

Costs associated with operation are negligible.

1. Other areas, as appropriate.

 None.