IEEE P802.15

Wireless Personal Area Networks

|  |  |
| --- | --- |
| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Responses to the PAR comments |
| Date Submitted | 15th March 2023 |
| Source | Tero Kivinen | E-mail: kivinen@iki.fi |
| Re: | PAR comments |
| Abstract | Provide responses to the PAR comments. |
| Purpose | Responses to TG4ac Privacy PAR comments |
| 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. |

|  |  |  |
| --- | --- | --- |
| **Comment** | **Text in PAR/CSD** | **Remarks / Answers to the Comments** |
| **In response to the comments from IEEE 802.1:** |
| **PAR:**5.2.b Scope of the project:This amendment specifies modifications to the IEEE Std 802.15.4 medium access control (MAC) specification to specify new mechanisms that address and improve user privacy.”According to 12.2.3 of the style manual, “The scope of the standard shall explain in statements of fact what is covered in the standard and, if necessary, what is not covered in the standard—in other words, the technical boundaries of the document.” The current scope does not provide technical boundaries on the types of mechanisms. Update the scope to describe the types of mechanisms that will be specified. An example of a PAR with a more specific scope can be seen in P802.11bh - https://development.standards.ieee.org/myproject-web/public/view.html#pardetail/8770 | **5.2.b Scope of the project:**This amendment specifies modifications to the IEEE Std 802.15.4 mediumaccess control (MAC) specification to specify new mechanisms that address and improve user privacy. | **Comment Accepted.**5.2.b Scope of the project: This amendment specifies modifications to the IEEE Std 802.15.4 medium access control (MAC) specification to specify ~~new~~ mechanisms that address and improve user privacy. These mechanisms include randomized addresses, and exchanges that support session continuity. This amendment maintains backward compatibility with the base standard.Revised final version:5.2.b Scope of the project: This amendment specifies modifications to the IEEE Std 802.15.4 medium access control (MAC) specification to specify mechanisms that address and improve user privacy. These mechanisms include randomized addresses, and exchanges that support session continuity. This amendment maintains backward compatibility with the base standard. |
| **CSD:**1.2.2 ComplianceThis project is an amendment to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. If the project decides to use local MAC addresses it will comply with IEEE Std 802 and proved amendmentsCorrect spelling error proved -> approvedWhile compliance with IEEE Std 802.1Q is not possible because of the use of 64-bit addresses, compliance with IEEE Std 802 is possible irrespective of using local or global MAC addresses. Replace the paragraph with, “This project is an amendment to an existing standard for which it has been previously determined that compliance with IEEE Std 802.1Q is not possible. The project will comply with IEEE Std 802 using either local or global MAC addresses.” | 1.2.2 Compatibility…a) 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.b) 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 | **Comment Accepted, used proposed text as is.**Revised final version:a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?No.b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.This project is an amendment to an existing standard for which it has been previously determined that compliance with IEEE Std 802.1Q is not possible. The project will comply with IEEE Std 802 using either local or global MAC addresses. |
| **In response to the comments from IEEE 802.3:** |
| **PAR:** 1.1 — Amendment projects are identified with letters that follow the base standard number.  This PAR does not have such letters. MyProject instructions for creating a draft PAR are very clear that the letters are required.  It appears to an outsider that the number should be P802.15.4ac. | **1.1 Project Number:** P802.15.4 | **Comment Accepted.**1.1 Project Number: P802.15.4acRevised final version:1.1 Project Number: P802.15.4ac |
| **PAR:**6.1.2 — The mention in the CSD of possible use of “randomized and changing addresses” would certainly raise RAC concern, not just the possibility of assigning an OUI to the standard. Assignment of an OUI would not be a RAC mandatory coordination issue, but specifications on specifications for use of the MA-L address block and included OUI would be a RAC mandatory coordination concern. | **6.1.2 Is the Standards Committee aware of possible registration activity related to this project?**Yes**Explanation:** This project might need a Organizationally Unique Identifier (OUI) allocated for privacy addresses. | **Comment Accepted.**~~This project might need a Organizationally Unique Identifier (OUI) allocated for privacy addresses.~~This project may amend the usage of MAC addresses, for example assigning randomized MAC addresses.Revised final version:This project may amend the usage of MAC addresses, for example assigning randomized MAC addresses. |
| **PAR:**7.1 — The sentence in 8.1 would make the correct answer to this question Yes. | **8.1 Additional Explanatory Notes:**This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects. | 802.11 commented that the 802.11 project is different, as it does not address the 802.15.4 privacy issues, and based on their comments we removed the reference to the IEEE 802.11 from the 8.1.~~This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects.~~ |
| **PAR:**8.1 — The item to which the note applies should be stated, and grammar could be improved.  Suggest:  “7.1 — The topic of this project is similar to ongoing work in other IEEE standards, like IEEE Std 802.11 work on enhancing privacy, but this project will specifically address needs for 802.15.4 interfaces. This project where appropriate, will apply what has been learned in those other privacy related activities." | **8.1 Additional Explanatory Notes:**This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects. | Removed additional explanatory notes:~~This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects.~~ |
| **CSD:**Title in header table — The title here should agree better with with the Amendment Title, either the compete 2.1 "IEEE Standard for Low-Rate Wireless Networks Amendment: Privacy Enhancements”, or at a minimum: "Privacy Enhancements”. | Title: New amendment for enhanced privacy for IEEE 802.15.4-2020andTitle: IEEE Standard for Enhanced Privacy for IEEE Std 802.15.4-2020 | Changed to use the latest CSD template, which do not have the frontpage, thus only one title is present. The title has been changed to match the par:IEEE Standard for Low-Rate Wireless Networks Amendment: Privacy Enhancements |
| **CSD:**Title at top of page 2 — Needs to agree with PAR per previous comment. | Title: New amendment for enhanced privacy for IEEE 802.15.4-2020andTitle: IEEE Standard for Enhanced Privacy for IEEE Std 802.15.4-2020 | Changed to use the latest CSD template, which do not have the frontpage, thus only one title is present. The title has been changed to match the par:IEEE Standard for Low-Rate Wireless Networks Amendment: Privacy Enhancements |
| **CSD:**1.1.1 — The edited answer to “No” now makes the content unresponsive.  1.1.1 asks where the management objects will be developed namely item a, b, or c for most all projects. This needs to be specified. | a) The definitions will be part of this project. No | Change the answer to be Yes:Revised final version:The definitions will be part of this project. Yes. |
| **CSD:**1.1.2,b — With the No answer to item a, an answer needs to be provided for why a CA document isn’t required.  Possibly (if true), something like:  “This project will not be modifying any of the radio properties of IEEE Std 802.15.4 that would affect spectral coexistence.” | a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) Nob) If not, explain why the CA document is not applicable.  | **Comment Accepted.**Add an explanation provided, but added “or channel access methods” to the end to be clear that this amendment is not modifying those either.Revised final version:a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)b) If not, explain why the CA document is not applicable.No, This project will not modify any of the radio properties of IEEE Std 802.15.4 that would affect spectral coexistence or channel access methods. |
| **CSD:**1.2.2,a — It would be appropriate to indicate if the project will be compatible with IEEE Std 802c-2017 (the optional SLAP capability). (It has long been the convention within IEEE SA that a reference to a base standard includes all approved amendments and corrigenda.) This is especially true since the answer to 1.2.1,a hints at the use of random addresses, but proposed project documentation is silent if such random addresses are in the local addresses or globally administered addresses. |  a) 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.b) 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 | **Comment Accepted.**Used the text suggested by the 802.1 in their comments.Revised final version:a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?No.b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.This project is an amendment to an existing standard for which it has been previously determined that compliance with IEEE Std 802.1Q is not possible. The project will comply with IEEE Std 802 using either local or global MAC addresses. |
| **In response to the comments from IEEE 802.11:** |
| **PAR:**8.1 include the full name of the “IEEE Std 802.15.4” standard in 8.1.. Same for “IEEE Std 802.11”. | **8.1 Additional Explanatory Notes:** This is similar activity that is ongoing in other IEEE standards, like IEEEStd 802.11 for privacy addresses. This project tries to learn the issues found in those other projects. | Removed the reference to the IEEE Std 802.11, so need to provide full name of it. The full name of the IEEE 802.15.4 is already in section 2.1.~~This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects.~~ |
| **PAR:**7.1 This should be changed to “yes” and then fill in the details. Suggestion to identify the uniqueness to help reviewers understand the real need for a different standard that seems to be “similar”. | **7.1 Are there other standards or projects with a similar scope?** No | **Accepted the next proposal.**Removed the comment from the 8.1, and did not change 7.1:~~This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects.~~ |
| **PAR:**The other option is to leave 7.1 as “no” and remove the sentence in 8.1 which adds to the confusion. We recognize that this project is specific to the privacy for 802.15.4. then you would not need to add IEEE Std 802.11 spelled out in 8.1 as well. | **7.1 Are there other standards or projects with a similar scope?** No**8.1 Additional Explanatory Notes:** This is similar activity that is ongoing in other IEEE standards, like IEEEStd 802.11 for privacy addresses. This project tries to learn the issues found in those other projects. | **Comment Accepted.**Removed the comment from the 8.1:~~This is similar activity that is ongoing in other IEEE standards, like IEEE Std 802.11 for privacy addresses. This project tries to learn the issues found in those other projects.~~ |
| **PAR:**1.1 – Suggest the Project number for the PAR – “P802.15.4xx” where xx is the next letter combination. | **1.1 Project Number:** P802.15.4 | **Comment Accepted.**1.1 Project Number: P802.15.4acRevised final version:1.1 Project Number: P802.15.4ac |
| **CSD:**The Version of the CSD “Based on IEEE 802 LMSC Operations Manuals approved 13 November 2015. Last edited 3 December 2015”is the wrong version template. The Policy and procedure directory has a 2020 version that shall be used. Please update the CSD to the correct template. |  | **Comment Accepted.**Replaced the with the latest version of the template. |
| **CSD:**For 1.1.1, the response is incorrect and not complete. (explain why is missing). | a) The definitions will be part of this project. No | **Comment Accepted.**Change the answer to be Yes:Revised final version:The definitions will be part of this project. Yes. |
| **CSD:**For 1.1.2, the response is incorrect and not complete. (Add explanation to b). | a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) Nob) If not, explain why the CA document is not applicable.  | **Comment Accepted.**Add an explanation provided, but added “or channel access methods” to the end to be clear that this amendment is not modifying those either.Revised final version:a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)b) If not, explain why the CA document is not applicable.No, This project will not modify any of the radio properties of IEEE Std 802.15.4 that would affect spectral coexistence or channel access methods. |
| **CSD:**1.2.1 a) Removing the first sentence would help clarify what the applicability is. Also, there are excessive superlative use in the first paragraph, so may be just delete the whole 1st paragraph. | a) 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.  | **Comment Accepted.**Rewrote the first paragraph, and removed superlatives:Currently the IEEE Std 802.15.4 standard is widely ~~extensively~~ implemented for an increasingly diverse range of applications including l~~ow 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. IEEE Std 802.15.4 specifies a range of PHYs which are suitable for many ~~vastly~~ different applications.Revised final version:Currently the IEEE Std 802.15.4 standard is widely implemented for an increasingly diverse range of applications including the Internet of Things. IEEE Std 802.15.4 specifies a range of PHYs which are suitable for many different applications. |
| **CSD:**1.2.1 a) “include IEEE Std 802.15.4 radios in them” remove the “in them”. It is not needed. | 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. | **Comment Accepted.**Removed in them: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 i~~n them~~, and this trend seems to be continuing. Because of this, enhancing the privacy of the IEEE Std 802.15.4~~-2020~~ is needed. In addition to mobile device manufacturers and users, manufacturers of static infrastructure to which mobile devices are connected will need to support these privacy enhancements.Revised final version:User privacy is an increasing area of focus in the wireless marketplace. Smartphones, for example, include IEEE Std 802.15.4 radios, and this trend seems to be continuing. Because of this, enhancing the privacy of the IEEE Std 802.15.4 is needed. In addition to mobile device manufacturers and users, manufacturers of static infrastructure to which mobile devices are connected will need to support these privacy enhancements. |
| **CSD:**1.2.1 a) “This project builds upon the existing standard, simplifying use of the standard to enable further adoption.” the amendment is not simplifying the standard, but rather it is adding privacy. This sentence could be deleted. | This project builds upon the existing standard, simplifying use of the standard to enable further adoption.  | **Comment Accepted.**Removed the paragraph. |
| **CSD:**1.2.4 b) This paragraph should be rewritten. The question is not if the completed amendment will be proven, but rather “Proven similar technology via testing, modeling, simulation, etc.”. Are there similar technology that can validate this new technology via testing, modeling, or simulation with 3rd party review. | b) 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.  | **Comment Accepted.**Rewrote the paragraph.IEEE Std 802.15.4 has been implemented in volume and widely deployed in many applications, demonstrating feasibility and value. The privacy enhancements, such as randomized and changing addresses, have been implemented in other standards such as IEEE Std 802.11, and this amendment learns from those other projects. This project brings these proven capabilities into IEEE Std 802.15.4 implementations.  |
| **CSD:**1.2.4 a) The use of “like” is like that used in California Valley girls, but we should look to rewrite this paragraph. | a) 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.  | **Comment Accepted.**The CSD does not like anybody anymore.Combined the 1.2.4 a) and 1.2.4 b) to following paragraph:IEEE Std 802.15.4 has been implemented in volume and widely deployed in many applications, demonstrating feasibility and value. The privacy enhancements, such as randomized and changing addresses, have been implemented in other standards such as IEEE Std 802.11, and this amendment learns from those other projects. This project brings these proven capabilities into IEEE Std 802.15.4 implementations.  |
| **CSD:**1.2.5 – This looks as if you cut and pasted the data from another CSD. Please consider rewriting one that is relevant to this project. |  a) 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. b) Known cost factors.The standard is built upon 802.15.4 which has been widely deployed at reasonable costs.c) Consideration of installation costs.There are no or at most minimal additional costs associated with installation. d) Consideration of operational costs (e.g., energy consumption).Costs associated with operation are negligible. e) Other areas, as appropriate.None. | **Comment Accepted.**The whole 1.2.5 was rewritten as follows:a) Known cost factors.b) Balanced costs.c) Consideration of installation costs.d) Consideration of operational costs (e.g., energy consumption).e) Other areas, as appropriate.The proposed amendment does not add any significant cost to either the infrastructure or the attached stations. The amendment is built upon IEEE Std 802.15.4 which has been widely deployed at reasonable costs. It is expected that ~~to~~ only minimal changes to implementations are needed, and the costs of that is minimal. |
| **In response to comments from Roger Marks:** |
| **5.1.2 Is the Standards Committee aware of possible registration activity related to this project?** Yes**Explanation:** This project might need a Organizationally Unique Identifier (OUI) allocated for privacy addresses.This explanation suggests a possible need for something that may be unavailable. The IEEE Registration Authority’s tutorial Guidelines for Use of Extended Unique Identifier (EUI), Organizationally Unique Identifier (OUI), and Company ID (CID) says that "With some exceptions, particularly with regard to protocol identifiers, each EUI is intended to be globally unique and bound to a hardware device instance or other object that requires unique identification.” It seems to me that this may be incompatible with the suggestion in the explanation. Since the explanation is speculative (“might”) anyway, I guess it would cause no harm to avoid calling out a proposal that contradicts RA policy.Consequently, I propose changing the explanation to something like: Explanation: This project may amend the usage of MAC addresses. | **5.1.2 Is the Standards Committee aware of possible registration activity related to this project?** Yes**Explanation:** This project might need a Organizationally Unique Identifier (OUI) allocated for privacy addresses. | **Comment Accepted.**~~This project might need a Organizationally Unique Identifier (OUI) allocated for privacy addresses.~~This project may amend the usage of MAC addresses, for example assigning randomized MAC addresses.Revised final version:This project may amend the usage of MAC addresses, for example assigning randomized MAC addresses. |
| **In response to comments from Robert Grow:** |
| **CSD:**1.1.2,a — The current CSD does not answer the question (though No is stated in the answer to item “b”). | a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no) Nob) If not, explain why the CA document is not applicable.  | **Comment Accepted.**Similar comment was already previously addressed:Revised final version:a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)b) If not, explain why the CA document is not applicable.No, This project will not modify any of the radio properties of IEEE Std 802.15.4 that would affect spectral coexistence or channel access methods. |
| **CSD:**1.1.2,b — Typo (“proved” should be “approved”). |  | **I think the correct clause is 1.2.2b where there used to be proved, that was already fixed by other comment:**Revised final version:a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?No.b) If the answer to a) is no, supply the response from the IEEE 802.1 WG.This project is an amendment to an existing standard for which it has been previously determined that compliance with IEEE Std 802.1Q is not possible. The project will comply with IEEE Std 802 using either local or global MAC addresses. |