

P802.15.4aa

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Type of Project: Amendment to IEEE Standard 802.15.4-2020
Project Request Type: Initiation / Amendment
PAR Request Date: 11 Oct 2020
PAR Approval Date:
PAR Expiration Date:
PAR Status: Submitted
Root Project: 802.15.4-2020

1.1 Project Number: P802.15.4aa
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: Standard for Low-Rate Wireless Networks Amendment: Higher data rate extension to IEEE 802.15.4 Smart Utility Network (SUN) Frequency Shift Keying (FSK) Physical layer (PHY)

3.1 Working Group: Wireless Specialty Networks (WSN) Working Group(C/LM/802.15 WG)

3.1.1 Contact Information for Working Group Chair:

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

3.2.1 Contact Information for Standards Committee Chair:

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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: Jul 2021

4.3 Projected Completion Date for Submittal to RevCom: Jul 2022

5.1 Approximate number of people expected to be actively involved in the development of this project: 10

5.2.a Scope of the complete standard: This standard defines the physical layer (PHY) and medium access control (MAC) sublayer specifications for low-data-rate wireless connectivity with fixed, portable, and moving devices with no battery or very limited battery consumption requirements. In addition, the standard provides modes that allow for precision ranging. PHYs are defined for devices operating in a variety of geographic regions.

5.2.b Scope of the project: This amendment defines a data rate extension of SUN FSK PHY to IEEE Std 802.15.4-2020. It adds data rate extensions for the SUN FSK modulation and channel parameters. These extensions focus on the Japanese frequency band, **902 - 928 MHz**.

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

5.4 Purpose: The standard provides for ultra low complexity, ~~ultra-low~~ cost, ~~ultra-low~~ and power consumption, ~~and~~ along with 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. In addition, some of the alternate PHYs provide precision ranging capability that is accurate to one meter. Multiple PHYs are defined to support a variety of frequency bands.

5.5 Need for the Project: The demand for the improvement of energy efficiency and the usage of renewable energy has increased worldwide to reduce global warming. As a result, since 2015, the use of smart meters has increased dramatically throughout Japan. More than tens of millions smart meters have

been deployed using the SUN FSK PHY communication protocol defined in IEEE Std 802.15.4. Additionally, there is a movement to collect and manage sensor data using wireless networks not only to optimize energy consumption and building lighting but also for crime and disaster prevention. Furthermore, these wireless sensor networks are increasingly being used to improve productivity in agriculture. In recent years, requirements for higher data rates have come from Japanese utilities to allow the number of nodes to be increased per **Personal Area Network (PAN)**, permitting the communication of various utility data for not only electricity but also gas and water, along with Over-the-Air (OTA) updates without an increase of the meter's energy consumption. In order to meet these requirements this amendment is needed. From the view point of backward compatibility and ease of wireless communication network design, the SUN FSK modulation scheme is suitable for these extended applications.

5.6 Stakeholders for the Standard: Chip Vendors, Product Manufacturers, Utilities, Agriculture, Infrastructure/Environmental Monitoring Organizations and similar Organizations.

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

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

8.1 Additional Explanatory Notes :