**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | IEEE 802.1 and IEEE 802.15 response to Wi-Fi Alliance with regard to Wi-Fi HaLow use case for Wireless Field Network on Industry Automation  |
| Date Submitted | 28 July 2016 |
| Source | [] | E-mail: [pat.kinney@kinneyconsultingllc.com] |
| Re: | Wi-Fi Alliance with regard to Wi-Fi HaLow use case for Wireless Field Network on Industry Automation |
| Abstract | Consensus response from joint meeting of 802.1 and 802.15 |
| Purpose | [Description of what the author wants P802.15 to do with the information in the document.] |
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**To:** Wi-Fi Alliance c/o Tina Hanzlik (thanzlik@wi-fi.org)

**From:** IEEE 802.1 and IEEE 802.15 work groups

The purpose of this document is to reply to the Wi-Fi Alliance’s request titled “Wi-Fi HaLow use case for Wireless Field Network on Industry Automation” sent on 17 July 2016 to Glenn Parsons, Chair, IEEE 802.1 Working Group.

The Wi-Fi Alliance’s request and use case were considered at a joint meeting between the IEEE 802.1 work group and the IEEE 802.15 work group on 26 July 2016. The meeting attendees found that the use case did not provide sufficient details to demonstrate that bridging is a required functionality. Perhaps additional information from the Wi-Fi Alliance could verify the bridging requirement.

The following statements are excerpts from the request:

1. Bridging between 802.15.4 and 802.11ah is a required functionality for this use case. As far as we know there is currently no standard solution for this bridging functionality.
2. Wi-Fi Alliance requests IEEE 802.1 Working Group to consider developing a general solution to bridging IEEE 802.15.4g devices using 64-bit MAC addresses with IEEE 802.11ah devices, as well as IEEE 802.3 devices using 48-bit MAC addresses and related issues such as frame format, timing adaptation and dealing with sleeping nodes.

Statement 1

There is no IEEE 802 standard that addresses bridging between IEEE 802.15.4 and IEEE 802.11ah. Currently, routers operating at the L3 layer provide the necessary connectivity between IEEE 802.15.4 devices and other IEEE 802 devices such as IEEE 802.3 and IEEE 802.11. This solution provides sufficient isolation between the different networking messaging to allow the IEEE 802.15.4 networks to operate with no issues. Furthermore, any timing delays due to the routers are insignificant since IEEE 802.15.4 devices use relatively slow data rates and long retransmission times. Finally, the Deterministic Networking (DetNet) Working Group of IETF is working with IEEE 802.1 on extending the TSN capabilities to layer 3 networks.

Statement 2

There have been numerous discussions in the past as to the possibility of bridging between IEEE 802.15.4 devices and IEEE 802.3 or IEEE 802.11 devices. Without getting too technically detailed, many significant issues beyond the obvious 48-bit MAC address to 64-bit MAC address would have to be resolved for any IEEE 802.15.4 bridging solution to be successful. For example, since IEEE 802.15.4 devices have relatively low data rates, significant energy constraints, and relatively long frame timing periods, the current network messaging structure of IEEE 802.1 bridges cannot be tolerated by IEEE 802.15.4 networks.

In conclusion, given the substantial problems with bridging to IEEE 802.15.4, we need to better understand why the existing connectivity solution(s) are not sufficient to address the supplied use case.