**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | D01 comment resolutions misc-A |
| Date Submitted | 6 January 2025 |
| Source | Billy Verso (Qorvo),  | billy.verso at qorvo.com |
| Re: | IEEE P802.15.4ab |
| Abstract | Comment Resolutions for selected comments on the LB207 / P802.15.4ab D01. |
| Purpose | This document provides text changes intended to be part of the final IEEE Std 802.15.4ab (amendment to IEEE Std 802.15.4), as part of resolving selected comments from the consolidated spreadsheet (doc 15-24-0371) that have been assigned to the author to resolve. |
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| Comments addressed here: |

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# Comment Indexes # 8, 98

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| **Index** | **page** | **clause** | **line** | **Comment** | **Proposed Change** |
| 8(Stefan) | 187 | 16.2.1 | 13 | PPDUs can also be transmitted sequentially, propose to make this a "may" statement | “In this MMS mode, the transmission and reception of the PPDU fragments ~~are typically~~ may be interleaved.” |
| 98(Frank) | 187 | 16.2.1 | 14 | Suggesting interleaving is typical represents bias. | Change "are typically" to "may be". |

**Discussion/Introduction:**

This relates to the *16.2 HRP UWB PPDU format* sub-clause *16.2.1 General* paragraph on p.187 lines 11–14, shown below:

The HRP-ARDEV shall support the MMS modulation described in 16.2.11 where the packet consists of a ranging sequence sent as short fragments that have a start-to-start spacing of at least one millisecond (499,200 chips) and where typically the packet will span multiple fragments. In this MMS mode, the transmission and reception of the PPDU fragments are typically interleaved.

The commenters are talking about the final sentence of this paragraph, which is informative. The use of “typically” here is in line with the various modes of operation described in clause 10.38, (and the implementation deployed in a popular smartphone), while its use does not preclude non-interleaved operation, so it does seem to be appropriate as it is.

**Proposed Disposition:** Rejected.

**Disposition Detail:** The use of the word “typically” is good here since clause 10.38 describes multiple schemes using interleaved fragments, and “typically” already implies that non-interleaved is also possible.

# Comment Index # 9

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| **Index** | **page** | **clause** | **line** | **Comment** | **Proposed Change** |
| 9(Stefan) | 192 | 16.2.11.1 | 31 | In some ranging protocols, it may be beneficial if no interleaving is used. Propose to make this a "may" statement | “For two-way ranging (TWR) with MMS packets, the fragment transmissions of the transmitted MMS packet ~~are~~ may be interleaved with fragment receptions of the received MMS response packet.” |

**Discussion:**

This relates to the final paragraph of *16.2.11 Multi-millisecond ranging packet format* sub-clause *16.2.11.1 General* paragraph on p.192 lines 31–33, shown below:

For two-way ranging (TWR) with MMS packets, the fragment transmissions of the transmitted MMS packet are interleaved with fragment receptions of the received MMS response packet. Subclause 10.38 details the MMS procedures and packet exchanges.

Here arguably the use of “are interleaved” is precluding a non-interleaved approach. And, while the benefits of not interleaving are unclear, interleaving has benefits in minimising the time to complete the ranging exchange. There are however use cases that are naturally non-interleaved, for example TDOA, so we should not preclude this mode of operation.

So, the proposed resolution is as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:** Modify the paragraph as shown below:

For two-way ranging (TWR) with MMS packets, the fragment transmissions of the transmitted MMS packet are typically interleaved with fragment receptions of the received MMS response packet. Subclause 10.38 details the MMS procedures and packet exchanges for TWR. The HRP UWB PHY MMS packet may also be sent (and received) in a non-interleaved way, e.g., for one-way ranging.

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