**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **Proposed resolution for comments on multiple RCMs and RSS** |
| Date Submitted | July 2024 |
| Sources | Mickael Maman (STMicroelectronics), Sven Zeisberg (Zigpos)  |  |
| Re: |   |
| Abstract | Resolution of comments: #1067, #1295, #1327, #1269, #1273, #1453, #1343 and #2 |
| Purpose | To propose comments resolution for “P802.15.4ab™/D01 Draft Standard for Low-Rate Wireless Networks”  |
| Notice | This document does not represent the agreed views of the IEEE 802.15 Working Group or IEEE 802.15.4ab Task Group. It represents only the views of the participants listed in the “Sources” field above.It is offered as a basis for discussion and is not binding on the contributing individuals. The material in this document is subject to change in form and content after further study. The contributors reserve the right to add, amend or withdraw material contained herein. |

***Comment Index #1067, #1295 and #1327 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| Billy Verso | 1067 | 41 | 10.32.1 | 29 | The last two sentences on this paragraph (running into first two lines of p42) is suggesting networks with multiple nodes acting as controller and giving different conflicting information that the receiving node has to choose between based on some random criteria. I guess this is all higher layer behaviour so perhaps we should not concern ourselves with it, but why even add these lines if it is some higher layer protocol that is really making sense of this.  | Consider what modifications are really necessary here, versus things that can be left to higher layer spec and modify accordingly. Maybe some text for an explanatory annex could be used to discuss the application scenarios where this occurs. |
| Pablo Corbalán Pelegrín | 1295 | 41 | 10.32.1 | 29 | A device listening to multiple RCMs with different ARC IEs in a ranging round may receiver various conflicting configurations. The text is currently a bit vague in how to deal with these conflicting RCMs. | Ellaborate a bit more how to deal with multiple RCMs in a single ranging round. Perhaps reference other sections where usage of this feature (multiple RCMs in a ranging round) is described. |
| B. Rolfe | 1327 | 42 | 10.32.1 | 2 | "It may be based on a majority decision" is stating a possibility outside the scope of this standard. | Change "may" to "might" |



**Discussion of comment ID 1067, 1295 and 1327:**

To increase the robustness and the scalability in dense multi-mode ranging (MMR) scenarios, multiple nodes may act as controller and send RCM in the same ranging round. The redundancy of sending multiple RCMs from several (fixed) nodes in a single ranging round bring spatial diversity for challenging dynamic environment with temporary shadowing and interference. In these scenarios, a device can receive several copies of the same RCMs from several (fixed) nodes in a single ranging round. If a device receives RCMs from different initiators with different contents in the same ranging round, It is up to the higher layer to select the RCM. It may be based on a majority decision or the best received packet quality (e.g., RSSI or LQI).

**Proposed resolution:**

**revised**

**Proposed text changes on P802.15.4ab™/D01 for comments 1067, 1295 and 1327:**

To increase the robustness and the scalability in dense multi-mode ranging scenarios, multiple nodes may act as controller and send RCM in the same ranging round. A ~~In dense multi-mode ranging scenarios, a~~ device may receive multiple copies of the same RCMs from several nodes in a single ranging round.

If a device receives RCMs with different contents, e.g. due to malfunction, in the same ranging round, the selection of the valid RCM by the device is implementation dependent. ~~It may be based on a majority decision, or~~ The higher layer might decide on it. Such decision could be majority based or could be based on the best received packet quality (e.g., RSSI or LQI).

***Comment Index #1269 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| Billy Verso | 1269 | 177 | 10.45.2 | 6 | "to be supported with this RSS." is strange phrasing. | Change: "Time structures for communication are defined by the Ranging Service to be supported with this RSS" to "Time structures for communication are specified by the RSS" |



The time structures are defined by the underlaying UWB system, which is supposed to be supported, (but not by the RSS itself)

**Proposed resolution:**

**Revised**

Time structures for communication are defined by the upper layer using UWB Ranging Service.

***Comment Index #1273 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| Billy Verso | 1273 | 177 | 10.45.2 | 19 | "to be supported" appears twice in the paragraph, (line 19 and 22). "The RSS slotframe starts at the beginning of the ranging round of the UWB ranging to be supported." seems clunky language to me, unless there is a technical reason for phrasing it this way, suggest a shorter phrase. | Change to: "The RSS slotframe is defined to start at the same time as the UWB ranging round". |



**Proposed resolution:**

**Accepted**

***Comment Index #1453 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| Huan-Bang Li  | 1453 | 177 | 10.45.2 | 26 | this case' in the last sentence is not clear. | describe 'this case' more clearly. |

**Proposed resolution:**

**Revised**

**Proposed text changes on P802.15.4ab™/D01 for comment 1453:**

For RSS, the CCA is Off in ~~this~~ the broadcast case.

***Comment Index #1343 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| B. Rolfe | 1343 | 178 | 10.45.3.3 | 14 | "may" means "may or may not" and "may not" is not correct in this standard. | delete "or may not". |



Devices in the RSS PAN can choose to listen or not broadcast frames during an Allocated Transmit Slot.

**Proposed resolution:**

**Accepted**

***Comment Index #2 in 15-24-0371-01-04ab-consolidated-comments-draft-1-0***

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| Commenter | Index # | page | Sub-Clause | Line | Comment | Proposed Change |
| Zhenzhen Ye | 2 | 41 | 10.32.1 | 28 | what is "multi-mode ranging"? Is it a typo of "multi-node ranging"? |  |

Yes, it is a typo. Multi-node ranging is defined in 15.4me standard.

**Proposed resolution:**

**accepted**