**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 Comments Resolution on Sensing and AC IE`** |
| Date Submitted | March 2024 |
| Sources | Pooria Pakrooh (Qualcomm)  |  |
| Re: |   |
| Abstract | Resolution to comments: 94, 97, 104, 156, 224, 410, 411, 432, 433, 553, 656, 663, 844, 846, 847, 881  |
| Purpose | To propose comments resolution for “P802.15.4ab™/D (pre-ballot) C 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. |

Rev 1: Changes relative to Rev0 🡪 CIDs 859, 860, 861 and 862 are removed.

***Comment Index #94 and #844 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 94 | Pooria Pakrooh | 10.39.2 | 106 | 22 | Without CIR report, sensing task is incomplete. The CIR report is not necessarily sent OTA. Remove OTA from the sentence and make it mandatory. | Change to: “For the cases that the sensing initiator is the sensing transmitter, a sensing measurement report shall be sent by the sensing responder to provide the measurement report to the sensing initiator.” |
| 844 | Carl Murray | 10.39.2 | 106 | 29 | Is the OTA qualification necessary here – does iot effectively limit the possible scenarios. | Delete “supporting scheduling of OTA CIR measurement reports from multiple responders” |

**Discussion:**

1. The responder shall provide the CIR report to complete the sensing operation.

2. The CIR report is not necessarily sent OTA.

**Resolution: Accepted**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 21 on Page 106 as follows*

For the cases that the sensing initiator is the sensing transmitter, a sensing measurement report shall be sent by the sensing responder to provide the measurement report to the sensing initiator.

*Change Line 29 on Page 106 as follows*

Multistatic sensing, where the initiator is the sensing transmitter, supporting scheduling of CIR measurement reports from multiple responders.

***Comment Index #553 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 553 | Youngwan So | 10.39.2 | 106 | 25-31 | Need to keep consistency.1. In line #7 in page #106, it says only "Sensing may be in either monostatic or multistatic scenarios.". 2. In line #25~31 in page #106, it mentions even about 'bi-static mode' and 'Sensing by proxy mode' in addition to 'mono' and 'multi-static'.3. In line #15 in page #117, here it also mentions all those four modes can be specified. (i.e. mono, bi, multi, SbP)From above, clarification is needed whther all those four modes are possible or just only a part is allowed. | Make changes to below three parts appropriately so as to keep consistency.1. In line #7 in page #1062. In line #25~31 in page #1063. In line #15 in page #117 |

**Discussion:**

There are four modes for sensing: Monostatic, bi-static, multi-static and SBP. The only change needed to address this comment is in line 7 of page 106, by removing sentence: " Sensing may be in either monostatic or multi-static scenarios".

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 7 on Page 106 as follows*

Sensing measurements may enable various applications such as presence detection and environmental mapping.

***Comment Index #656 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 656 | Rojan Chitrakar | 10.39.4.3 | 108 | 5 | "The format of the sensing packets is defined within the PHY clause(s) of those PHYs capable of being SDEV."What are these PHYs? | List out the relevant PHYs. |

**Discussion:**

Agree with the commenter that a more accurate reference is needed.

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 5 on Page 108 as follows*

In the sensing phase sensing packets are sent by the sensing initiator and/or sensing responders. The format of the sensing packets is defined in 16.2.1.

***Comment Index #410 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 410 | Bin Qian | 10.39.4.5.1 | 109 | 5 | What do other means refer to? OOB? | As in the comment |

**Discussion:**

Using “OOB means” instated of “other means” makes this statement clearer.

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 5 on Page 109 as follows*

The bitmap length and offset are negotiated and determined through OOB means, and they are fixed during sensing session.

***Comment Indices #411 and #846 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 411 | Bin Qian | 10.39.4.5.2 | 109 | 12 | The value of L is not clear. Is the latter number greater than the previous number by 16 or twice? | As in the comment |
| 846 | Carl Murray | 10.39.4.5.2 | 109 | 12 | L= {16, …, M/2} as otherwise 32 is a length for M = 32 | ChangeL= {16, 32, …, M/2}ToL= {16, …, M/2} |

**Discussion:**

Replace “=” with “belonging to the set” and specify “L” can take any power-of-2 value within the set.

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 12 on Page 109 as follows*

To limit the test burden for the mandatory CIR report bitmap mode, an SDEV shall support for each bitmap

length M = {32, 64, 128, 256}, two strings of all ones, with equal length L, where L shall be an integer power of 2, belonging to the set {16, …, M/2}.

***Comment Index #847 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 847 | Carl Murray | 10.39.4.5.2 | 109 | 22 | This sentence does not make sense - in particular the "or" in "and/or" |  |

**Discussion:**

Remove "and/or more than one SENS segment are used", as it does not add any useful information. When there is more than one segment, the sentence specifies that reports associated with all antennas per segment have a common reference tap.

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 7 on Page 106 as follows*

For each segment, if more than one receiving antenna is used, a common reference tap shall be used for the CIR reports of all antennas . The common reference tap for each segment shall be earliest detected tap of antenna 0 for the segment.

***Comment Index #663 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 663 | Rojan Chitrakar | 10.39.4.6 | 110 | 11 | There is no termination phase in Figure 124. Does it happen in a different sensing round? | As in comment. |

**Discussion:**

Sensing measurements happen in a sensing round, as shown in Figure 124. The session setup and session termination phases are done OOB and not detailed in the draft.

**Resolution: Rejected**

***Comment Index #156 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 156 | Benjamin Rolfe | 10.39.7.1 | 114 | 13 | " which should typically be used to report certain measurement information, " is incorrect use of "should" (see clause 1.3). | Change "should" to "would" |

**Resolution: Accepted**

***Comment Index #97, #104, #432 and #433 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 97 | Pooria Pakrooh | 10.39.7.1 | 117 | 2 | One request bit would suffice for requesting CIR report for nonsesning packets. | Change bit 3 description to "CIR report request for nonsensing packet". Also, remove last field "Nonsensing CIR report parameters". |
| 104 | Pooria Pakrooh | 10.39.7.1 | 123 | 20 | Only a request bit for nonsensing packet is enough. The packet identifier and source of report are not needed and cause confusion. | Remove all the content starting from line 3 to the line 13 (end of page 126". |
| 432 | Bin Qian | 10.39.7.1 | 126 | 4 | Instead of the Transmission Packet Format Identifier field, a simpler way is to add one more bit in the Common Ranging Control field, MMS Ranging Control field, Data Comm Control field, respectively, to request CIR report | As in the comment |
| 433 | Bin Qian | 10.39.7.1 | 126 | 4 | It seems that how to generate the CIR report is implementation specific, which is out the scope of 4ab. Thus, it is suggested to remove the Source of CIR Report field | As in the comment |

**Discussion:**

Request of CIR report for nonsensing packets can be carried out by having one request bit in the AC IE. It is not necessary to introduce the details regarding transmission packet identifier and source of the report in the AC IE.

**Resolution: Revised**

***Proposed text changes on P802.15.4ab™/D (pre-ballot) C:***

1. *Line 2 on Page 117: Change bit 3 description to "CIR report request for nonsensing packet". Also, remove last field "Nonsensing CIR report parameters".*
2. *Remove the following content from page 126:*



***Comment Index #224 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 224 | Billy Verso | 10.39.7.2 | 127 | 5 | In figure 145 field size of 36 for the Report Parameters Control, should be 35. | Change "36" to "35" |

**Discussion:**

The maximum Report parameter Control number of in from Figure 145 should be 35.



**Resolution: Accepted**

***Comment Index #881 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 881 | Carl Murray | 16.4.4 | 178 | 29 | This text is too broad -"For any continuous set of values that contain …" | Change to -"The requirement thus states that for some continuous set of values that contain …"  |

**Discussion:**

Agree with the commenter. Additionally, “magnitude” should be removed.

**Resolution: Revised**

**Proposed text changes on P802.15.4ab™/D (pre-ballot) C:**

*Change Line 29 on Page 178 as follows*

For some continuous set of values that contain the point *τmax*, it is required that | *ϕ*(*τ*) | is no less than 0.92.