**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 CID – 102, 110, 111, 673, 674, 675, 676** |
| Date Submitted | May 2024 |
| Sources | Aniruddh Rao Kabbinale (Samsung), Frank Leong (NXP), Dag Wisland, Kristian Granhaug (Novelda)aniruddh.rao@samsung.com |  |
| Re: |   |
| Abstract |  |
| Purpose | To propose resolution for comments related to Sensing CIDs – 102, 110, 111, 673, 674, 675 and 676 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 0: Initial version.

***Comment Indices in 15-24-0010-00-04ab-consolidated-comments-draft-c related to sensing:***

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Name** | **Index#** | **Pg** | **Sub-Clause** | **Ln** | **Comment** | **Proposed Change** | **Disposition** | **Disposition detail** |
| Pooria Pakrooh | 102 | 123 | 10.39.7.1 | 20 | Receiver orientation should be based on its rotation around each axis: Roll, Pitch and Yaw. | Change to: "The Receiver Orientation field value when one is requesting a report of the receiver orientation in terms of roll, pitch and yaw." | Rejected | Keep the terminology in line with terminology used for AOA in 4z with transmitter as reference point. The proposed terminology is used more in airborne radar/satellite not common to use cases for UWB. |
| Pooria Pakrooh | 110 | 132 | 10.39.7.6 | 18 | Receiver orientation should be based on its rotation around each axis: Roll, Pitch and Yaw. | Change the fields "Receiver orientation Azimuth/Elevation/Rotation (3 octets)" to "Receiver orientation: Roll/Pitch/Yaw (3 Bytes)" | Rejected | Keep the terminology in line with terminology used for AOA in 4z with transmitter as reference point. The measurements are relative to transmitter as mentioned in the description for Figure 153 |
| Rojan Chitrakar | 673 | 132 | 10.39.7.6 | 18 | Are the Receiver Orientation fields meant to be optionally present? If so, how is the presence indicated? | Clarify how the presence/absence of fields are indicated. | Accepted | Added presence fields |
| Rojan Chitrakar | 674 | 133 | 10.39.7.6 | 9 | Full Target Report List element is not octet aligned. Are the fields (except Target ID) meant to be optionally present? If so, how is the presence indicated? | Ensure the element is octet aligned. Also clarify how the presence/absence of fields are indicated. | Accepted | Added Presence field to Figure 154.In Fig 154 - Correction to Azimuth and elevation to 8 bit - which is a 7 bit signed value (1 bit for sign and 7 bit magnitude).Adding description to Fig 153 Proposing zero padding at end of the full target list and sparse target list for octet alignment  |
| Rojan Chitrakar | 675 | 133 | 10.39.7.6 | 13 | Sparse Target Report List element is not octet aligned. Are the fields (except Target ID) meant to be optionally present? If so, how is the presence indicated? | Clarify how the presence/absence of fields are indicated. | Accepted | Added Presence Field to Figure 155As a description to Figure 153, Proposing zero padding at end of the full target list and sparse target list for octet alignment  |
| Pooria Pakrooh | 111 | 133 | 10.39.7.6 | 27 |

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| Make the description clear and edit the typos. |
|

 | Change to:" An example for the span report is to include the span of taps with amplitude larger than 10% of peak amplitude of the CIR Taps." | Accepted | Text to be updated as per proposed change |
| Rojan Chitrakar | 676 | 134 | 10.39.7.6 | 4 | Are the Receiver Orientation fields meant to be optionally present? If so, how is the presence indicated? | Ensure the element is octet aligned. Also clarify how the presence/absence of fields are indicated. | Accepted | Added presence field to Figure 156In description to fig 156 -zero padding at end of the DEFLATE compressed report ensures octet alignment  |

**Text changes**：Highlighted in Yellow

**For CID 673**

**10.39.7.6**

**Change at Page 132, Line 18:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0–5**  | **6**  | **7–12**  | **13–16**  | **19** | **20** | **21** | **22-23** | **Octets: 0/1**  | **0/1**  | **0/1**  | **0/Variable**  | **0/Variable**  |
| Number of Targets  | EOL  | Number of Full Targets  | Number of Sparse Targets  | Presence indication Receiver Orientation (Azimuth)  | Presence indication Receiver Orientation (Elevation)  | Presence indication Receiver Orientation (Rotation)  | Reserved | Receiver Orientation (Azimuth)  | Receiver Orientation (Elevation)  | Receiver Orientation (Rotation)  | Full Target Report List  | Sparse Target Report List  |

**Figure 153—Processed Target Feature Report IE Content field format**

**For CID 674**

**10.39.7.6**

**Change at Page 133, Line 6:**

The Full Target Report List field if present contains a series of full target reports, each formatted as per 6 Figure 154. The number of elements in the list is specified by the value of the Number of Full Targets 7 field. The Full Target Report List is zero padded to be an integral number of octets.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 5**  | **8** | **0/8** | **0/8**  | **0/8**  | **0/8**  | **0/4**  | **0/8**  | **0/8**  | **0/8**  |
| Target ID  | Presence Indication of optional report fields in Full Target Report | Azimuth  | Elevation  | Delay  | Delay Span  | Velocity  | RSSI  | Angle Span (Azimuth)  | Angle Span (Elevation ) |

**Figure 154— Format of a Full Target Report List element**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 1** | **1** | **1** | **1** | **1** | **1** | **1** | **1** |
| Azimuth Presence indication | Elevation Presence indication | Delay Presence indication | Delay Span Presence indication t  | Velocity Presence indication | RSSI Presence indication  | Angle Span (Azimuth) Presence indication | Angle Span (Elevation) Presence indication |

**Figure xxx— Format of Presence Indication of optional report fields in Full Target Report**

**For CID 675**

**Change at Page 133, line 10**

The Sparse Target Report List field if present contains a series of sparse target report elements, each 10 formatted as per Figure 155. The number of elements in the list is specified by the value of the Number of 11 Sparse Targets field. The Sparse Target Report List is zero padded to be an integral number of octets.

|  |  |  |  |
| --- | --- | --- | --- |
| **Bits: 5**  | **2** | **0/8**  | **0/4**  |
| Target ID  | Presence Indication of optional report fields in Sparse Target Report | Delay  | Velocity  |

**Figure 154— Format of a Sparse Target Report List element**

|  |  |
| --- | --- |
| **Bits: 1** | **1** |
| Delay Presence indication | Velocity Presence indication |

**Figure xxx— Format of Presence Indication of optional report fields in Sparse Target Report**

**For CID 111**

**Change at Page 133, line 27**

The Delay Span field is an 8-bit per target information about the delay span for the target. ~~An example filter 27 for delay span calculation would be 10% of the peak amplitude of the CIR taps.~~ An example for the span report is to include the span of taps with amplitude larger than 10% of peak amplitude of the CIR Taps

**For CID 676**

**10.39.7.6**

**Change at Page 134, Line 4:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0–5**  | **6**  | **7–12**  | **13–16**  | **19** | **20** | **21** | **22-23** | **Octets: 0/1**  | **0/1**  | **0/1**  | **0/Variable**  |
| Number of Targets | EOL | Number of Full Targets | Number of Sparse Targets | Presence indication Receiver Orientation (Azimuth)  | Presence indication Receiver Orientation (Elevation)  | Presence indication Receiver Orientation (Rotation)  | Reserved | Receiver Orientation (Azimuth)  | Receiver Orientation (Elevation)  | Receiver Orientation (Rotation)  | DEFLATE compressed rewport |

**Figure 156—Processed Target Feature Report IE Content field format**