**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 Updates on AC IE and CIR Report IE** |
| Date Submitted | October, 2023 |
| Sources | Bin Qian, Lei Huang, Chenchen Liu, David Xun Yang (Huawei)  |  |
| Re: |   |
| Abstract |  |
| Purpose | To propose resolution to AC IE comments for “P802.15.4ab™/D (pre-ballot) B Draft Standard for Low-Rate Wireless Networks”  |
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**Discussion:**

The sensing report could include: (1) Window-based CIR report in the CIR Report IE; (2) Optional processed target features in the Processed Target Feature IE (DCN 505r0); (3) Combinations of above. It is preferred to have a unified CIR Report Parameters field in the AC IE to configure both the CIR Report IE and the Processed Target Feature IE for simplicity.

**Proposed text changes based on DCN466r2:**

### 10.36.7.1 Application Control IE (AC IE)

The Sensing Report Parameters field is formatted as per Figure 84.

***Replace Figure 84 with the following figure:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bits: 0-1** | **2** | **3** | **4-7** | **Octets: Variable** |
| Report Type | Compression | Report Mode | Reserved | Report Parameters |

**Figure 84—Sensing Report Parameters subfield of the Sensing Control field of the AC IE**

The Report Type field specifies the IEs to be reported in the sensing round(s) that follow the AC IE. The Report Type field shall have one of the values defined in Table x.1.

Table x.1 – Values of Report Type subfield of the Sensing Report Parameters field

|  |  |
| --- | --- |
| **Report Type field value** | **Meaning** |
| 0 | The CIR Report IE |
| 1 | The Processed Target Feature IE |
| 2 | Both the CIR Report IE and the Processed Target Feature IE |
| 3 | Reserved |

The Compression field when one indicates that the compression is enabled. In this case, the fields to be compressed are defined in Table x.2

 Table x.2 – Fields to be compressed

|  |  |
| --- | --- |
| **Report Type field value** | **Meaning** |
| 0 | Receive Report(s) in the CIR Report IE |
| 1 | Full Target List field and Sparse Target List field in the Processed Target Feature IE |
| 2 | Receive Report(s) in the CIR Report IE, and Full Target List field and Sparse Target List field in the Processed Target Feature IE |

The Compression field when zero indicates that the compression is disabled.

The Report Mode field when one indicates that the reported IE(s) are transmitted via in-band, or when zero that the reported IE(s) are transmitted via out-of-band.

When the Report Type field is 0, the Report Parameters field is formatted as per Figure a.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0-1** | **2-3** | **4-13** | **14-15** | **16-17** | **18-24** | **25-31** | **Octets: 0/4/8/16/32** |
| CIR I/Q Number of Bits | Bitmap Mode | Bitmap Offset | Reference Tap | Length | Mode Dependent Parameters | Reserved | Bitmap |

Figure a - Report Parameters subfield of the Sensing Report Parameters field of the AC IE when the Report Type field is 0

***Note to Editor: The fields in Figure a have been defined in the approved document DCN466r2***

When the Report Type field is 1, the Report Parameters field is formatted as per Figure b.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| Angle of Arrival (Azimuth) | Angle of Arrival (Elevation) | Delay | Velocity | RSSI | Span | Span Reference | Receiver Orientation |

Figure b - Report Parameters subfield of the Sensing Report Parameters field of the AC IE when the Report Type field is 1

***Note to Editor: The fields in Figure b have been defined in the approved document DCN505r3***

When the Report Type field is 2, the Report Parameters field is formatted as per Figure c.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0-1** | **2-3** | **4-13** | **14-15** | **16-17** | **18-24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** | **32-39** | **Octets: 0/4/8/16/32** |
| CIR I/Q Number of Bits | Bitmap Mode | Bitmap Offset | Reference Tap | Length | Mode Dependent Parameters | Angle of Arrival (Azimuth) | Angle of Arrival (Elevation) | Delay | Velocity | RSSI | Span | Span Reference | Receiver Orientation | Reserved | Bitmap |

Figure c - Report Parameters subfield of the Sensing Report Parameters field of the AC IE when the Report Type field is 2

***Note to Editor: The fields in Figure c have been defined in the approved document DCN466r2 and DCN505r3***

**Discussion:**

The Compression field has been defined in the CIR Report IE. However, the description of the Compression field is missing. Further, the specific compression method and the compressed field need to be identified.

**Proposed text changes based on DCN496r1:**

### 10.36.7.2 CIR Report IE

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The Number of Segments field value plus one shall indicate the number of sensing segments being reported on. For each sensing segment there shall be a separate Receive Report field included in the CIR report IE.

The Compression field when one indicates that the Receive Report(s) field is DEFLATE compressed, or when zero that compression is not enabled. To enable the byte-wise processing, the Receive Report(s) to be compressed could be zero padded.

The CIR Bitmap field indicates which CIR taps are present in the Receive Report(s) field. A binary one indicates that the tap value is present in the Receive Report(s) field, while binary zero indicates the tap value is not present.

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