**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 Text for PTF report IEs in 10.36.7** |
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| Re: | Contribution to IEEE 802.15.4ab  |
| Abstract |  |
| Purpose | This submission proposes text to for the IEEE Std 802.15.4ab specification framework document. |
| 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 “Source(s)” field above. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |

## Sensing

### 10.36.7 Nested IEs for Sensing

***This document adds PTF report IEs. The baseline is P802.15.4ab-pre-ballot-B.***

***Add this Text after 10.36.7.5***

**10.36.7.6 Processed Target Feature Report IEs**

Processed Target Feature IEs enable exchange of processed report for sensing apart from CIR report. The IEs enable exchange of parameter values for Angle of arrival, range, velocity, RCS. The IEs also provide a container to exchange application specific parameter values as part of report for example, heart rate, dimensions of target object etc.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0-6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14-15** |
| PTF ID | Confidence level for PTF | Angle of Arrival | Range | Velocity | CIR Report | RCS | DEFLATE compression | Reserved |

Figure xx1 – Processed Target Feature Request IE

PTF ID – 7 bit (application configured) Identifier for Processed Target Feature. Ex: ID 0 – Heartrate, ID 1 – Breathing rate

Confidence level for PTF – 0 if not requested, 1 if requested

Angle of Arrival – 0 if not requested, 1 if requested

Range – 0 if not requested, 1 if requested

Velocity – 0 if not requested, 1 if requested

CIR report – 0 if not requested, 1 if requested

RCS – 0 if not requested, 1 if requested

DEFLATE – 0 if DEFLATE compression not enabled, 1 if DEFLATE compression enabled

The Processed Target Feature response IE when DEFLATE compression is not enabled is as shown in Figure XX2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0-5** | **6** | **7** | **8-13** | **14-19** | **0/Variable** | **0/Variable** | **0/variable** |
| Number of Targets | EOL | Reserved | Number of Full Targets | Number of Sparse Targets | CIR Report | Full Target list | Sparse Target list |

Figure xx2 – Processed Target Feature response IE

Number of Targets – Indicates the number of targets detected

EOL - End-Of-List indicator. If set to zero, the target list will be continued in the next report frame. If set to one, the current report frame completes the list.

Number of Full Targets – Number of targets for which Full target report is available

Number of Sparse Targets - Number of targets for which sparse target report is available

Full Target List - List of full target reports.

Sparse Target List - List of sparse target reports, which contain only range and velocity

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0/variable** | **0/variable** | **0/7 bits** | **0/7 bits** | **0/ 8 bits** | **0/4 bits** | **0/ 6 bits** |
| PTF Value | Confidence level for PTF value | Azimuth | Elevation | Range | Velocity | RCS |

Figure xx3 – Full Target report

|  |  |
| --- | --- |
| **Bits: 0/8 bits** | **0/4 bits** |
| Range | Velocity |

Figure XX4 – Sparse Target report

PTF value - container to exchange value/report for application specific or application configured PTF parameter. Example – heart rate of the target object.

Confidence level for PTF value – Confidence in the value shared for PTF, optionally one Confidence level for report value is sent for each target in the full target list

Azimuth - Azimuth-of-Arrival of a target (7 bits, linear from -π to +π). Optionally, one Azimuth field is sent for each target in the full target list.

Elevation - Elevation-of-Arrival of a target (7 bits, linear from -π to +π). Optionally, one Elevation field is sent for each target in the full target list.

Range - Range of a target (8 bits, positive integer). One Range field is sent for each target in both full and sparse target lists.

Velocity - Velocity of a target (4 bits, signed integer). One Velocity field is sent for each target in both full and sparse target lists.

RCS - Radar Cross Section of a target (6 bits, logarithmic scale, maximum RCS indicates expected target not detected). One RCS field is sent for each target in the full target list.

The Processed Target Feature response IE when DEFLATE compression is enabled is as shown in Figure XX5

|  |  |  |  |
| --- | --- | --- | --- |
| **Bits: 0-5** | **6** | **7** | **Variable** |
| Number of Targets | EOL | Reserved | DEFLATE compressed report |

Figure xx2 – Processed Target Feature response IE

DEFLATE compressed report would contain Number of Full Targets, Number of Sparse Targets, CIR Report, Full Target List and Sparse Target List - appended and compressed together. DEFLATE compressed report can be zero padded to enable byte-wise processing.