**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 for Frequency Stitching Parameters field** |
| Date Submitted | Sep. 9, 2023 |
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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. |

*Change Figure 85 and the corresponding description in 10.36.7.1 as follows*

The Frequency stitching Parameters field is formatted as per Figure 85.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Bits: 0** | **1-4** | **5-6** | **7** | **8-11** | **12-13** | **14-15** |
| Frequency Stitching Direction | Base Channel | Carrier Frequency Grid | Channel Sequence Order | Number of Transmissions | Feedback Control | Reserved |

**Figure 85-Frequency Stitching Parameters subfield of the Sensing Control field of the AC IE**

The Frequency Stitching Direction field when one indicates the direction of usage of channels, from base channel, for frequency stitching, and when zero indicates…

The Base Channel field indicates the starting channel for performing UWB sensing when frequency stitching is enabled.

The Carrier Frequency Grid field selects the carrier frequency grid for frequency stitching, as defined in Table 13.

**Table 13 – Values of Carrier Frequency Grid field**

|  |  |
| --- | --- |
| **Carrier Frequency Grid field value** | **Meaning** |
| 0 | 499.2 MHz carrier frequency grid,  No overlap of consecutive frequency stitching channels. |
| 1 | 374.4 MHz carrier frequency grid, 25% overlap of consecutive frequency stitching channels. |
| 2 | 249.6 MHz carrier frequency grid, 50% overlap of consecutive frequency stitching channels. |
| 3 | 124.8 MHz carrier frequency grid, 75% overlap of consecutive frequency stitching channels. |

The Channel sequence Order field specifies the sequence of channel use in frequency stitching mode.

When the Channel Sequence Order field value is zero the channels used are selected in sequence starting at the channel defined by the Base Channel field value and increasing in frequency using the step size defined by the Carrier Frequency Grid field value.

When the Channel Sequence Order field value is one the channels used are selected according to the formula:

CH((p\*(OF+1) MOD (N)) + (p\*(OF +1) DIV (N)))

where p starts iterates sequentially from zero through to N-1,

N is the number of steps as specified by the Number of Transmissions field,

OF is the overlap factor, which is equal to Carrier Frequency Grid field value,

MOD is the modulo operator, and DIV denotes integer division. The center frequency (in MHz) of CH(*i*) could be computed according to

where is the center frequency of the base channel, and is the Frequency Stitching Direction field value.

The Number of Transmissions field value is used in frequency stitching mode. The Number of Transmissions field value plus one, is the total number of transmissions to be done at the different channel center frequencies, i.e., the number of steps selecting different frequencies as dictated by the Channel sequence Order field value.

The Feedback Control field selects when the CIR report is generated, as defined in Table 14.

**Table 14 – Values of Feedback Control field**

|  |  |
| --- | --- |
| **Feedback Control field value** | **Meaning** |
| 0 | Report after each transmission |
| 1 | Report for all transmission after the last transmission |
| 2 | Report for the aggregated channel after the last transmission |