**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **Text for Scheduling IE** |
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| Re: | Contribution to IEEE 802.15.4ab |
| Abstract | This document provides draft text for Scheduling IE |
| Purpose | Support development of technical content for the draft |
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**7.4 IEs**

**7.4.4 Nested IE**

***Insert the new text at the end of 7.4.4.55 as follows***

**7.4.4.X Scheduling IE**

The Scheduling IE is used by the controller to schedule slots to be used by intended device. The Content field of the Scheduling IE shall be formatted as shown in Figure 7-X.

|  |  |  |  |
| --- | --- | --- | --- |
| Bits: 0–3 | 4 | 5–7 | Octets: variable |
| Scheduling List Length | Scheduling List Type | Reserved | Scheduling List |

**Figure 7-X – Scheduling IE Content field format**

The Scheduling List Length field indicates the number of elements in the Scheduling List field, each of which is formatted as per Figure 7-XX or Figure 7-XXX depending on the value of the Scheduling List Type field.

The Scheduling List Type field specifies how each element of the Scheduling List field is formatted. When the Scheduling List Type field is set to 0, Scheduling List elements shall be formatted as per Figure 7-XX. When the Scheduling List Type field is set to 1, Scheduling List elements shall be formatted as per Figure 7-XXX.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits: 0–1 | 2 | 3 | 4 | 5 | 6–7 | Octets: Variable | 2/8 | 0/2/8 | 0/1 |
| Scheduling Bitmap Length | Sender Address Size | Receiver Address Present | Receiver Address Size | Bitmap Offset Present | Reserved | Scheduling Bitmap | Sender Address | Receiver Address | Bitmap Offset |

**Figure 7-XX – Scheduling List element format when Scheduling List Type is 0**

The Scheduling Bitmap Length field specifies the size of the Bitmap field. The Scheduling Bitmap Length field shall have one of the values specified in Table 7-X.

**Table 7-X – Values of the Scheduling Bitmap Length field in the Scheduling IE**

|  |  |
| --- | --- |
| Scheduling Bitmap Length field value | The size of Scheduling Bitmap field |
| 0 | 8 bits bitmap |
| 1 | 16 bits bitmap |
| 2 | 32 bits bitmap |
| 3 | 64 bits bitmap |

The Sender Address Size field specifies the size of the Sender Address field. If the Sender Address Size field is zero, short address shall be used for Sender Address field. If the Sender Address Size field is one, extended address shall be used for Sender Address field.

The Receiver Address Present field when one indicates the presence of the Receiver Address field, or not present when zero.

The Receiver Address Size field specifies the size of the Receiver Address field. If the Receiver Address Size field is zero, short address shall be used for Receiver Address field. If the Receiver Address Size field is one, extended address shall be used for Receiver Address field. When the Receiver Address Present field is set to zero, the Receiver Address Size field shall be ignored.

The Bitmap Offset Present field when one indicates the presence of the Bitmap Offset field, or not present when zero.

The Scheduling Bitmap field contains a binary bitmap string. Each bit maps to the slots following the slot in which the Scheduling IE is transmitted. For example, if the Scheduling IE is sent in the slot whose index is 0 and the Bitmap Offset Present field is set to 0, the first bit corresponds to the slot whose index is 1. The bit is set to 1 to indicate that the corresponding slot is scheduled, otherwise the bit is set to zero to indicate that the corresponding slot is not scheduled. The first bit in time sent in the field refers to the first time slot and the subsequent bits refer chronologically to the subsequent time slots. When the number of bits sent in the Scheduling Bitmap field is greater than the number of remained slots, the last excess bits sent shall be ignored.

The Sender Address field identifies which device can send frames in scheduled slots.

The Receiver Address field, if present, indicates the device to which frames will be sent in scheduled slots.

The Bitmap Offset field specifies the number of slots between the slot on which the Scheduling IE is sent and the first slot to be scheduled. The first slot to be scheduled corresponds to the first bit in the bitmap. For example, if the Scheduling IE is sent in the slot whose index is 0 and the Bitmap Offset field is set to 5, the first bit corresponds to the slot whose index is 6.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Bits: 0–6 | 7 | 8 | 9 | 10–13 | 14–18 | 19–24 | Octets: 2/8 | 0/2/8 |
| Starting Slot Index | Sender Address Size | Receiver Address Present | Receiver Address Size | Scheduling Step | Scheduling Repetition | Reserved | Sender Address | Receiver Address |

**Figure 7-XXX – Scheduling List element format when Scheduling List Type is 1**

The Starting Slot Index field indicates the first slot of the periodic scheduling pattern.

The Sender Address Size field specifies the size of the Sender Address field. If the Sender Address Size field is zero, short address shall be used for Sender Address field. If the Sender Address Size field is one, extended address shall be used for Sender Address field.

The Receiver Address Present field when one indicates the presence of the Receiver Address field, or not present when zero.

The Receiver Address Size field specifies the size of the Receiver Address field. If the Receiver Address Size field is zero, short address shall be used for Receiver Address field. If the Receiver Address Size field is one, extended address shall be used for Receiver Address field. When the Receiver Address Present field is set to zero, the Receiver Address Size field shall be ignored.

The Scheduling Step field specifies the number of slots in the gap between scheduled slots. The Scheduling Repetition field specifies the number of scheduled slots within the periodic scheduling pattern.

The Sender Address field identifies which device can send frames in scheduled slots.

The Receiver Address field, if present, indicates the device to which frames will be sent in scheduled slots.

If RDM IE defined in 7.4.4.44 and the scheduling IE defined in 7.4.4.x exist in the same control message, then each ERDEV(s) in enhanced HPRF mode shall only be scheduled by the scheduling IE defined in 7.4.4.x.