**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | IEEE 802.15.4z comment resolutions for D3 |
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| Re: |  |
| Abstract | This contribution proposes updated text for the baseline draft P802.15.4z-D3 |
| Purpose | Provision of the text to facilitate its incorporation into the draft text of the IEEE 802.15.4z standard currently under development in TG4z. |
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| Release |  |
| Patent Policy | The contributor is familiar with the IEEE-SA Patent Policy and Procedures:<http://standards.ieee.org/guides/bylaws/sect6-7.html#6> and<http://standards.ieee.org/guides/opman/sect6.html#6.3>.Further information is located at <http://standards.ieee.org/board/pat/pat-material.html> and<http://standards.ieee.org/board/pat>. |

* **CID-0232, CID-0233, CID-0234, Page 41, Sub-clause 6.9.7.3.2, line 25**

**Resolution: Revise Resolution Detail:**

*Replace the Figure 20 on page 42 by the following one:*



*Replace the Figure 21 on page 43 by the following one:*



*Replace the Figure 22 on page 43 by the following one:*



* **CID-0236, CID-0238, Page 43, Sub-clause 6.9.7.3.2, line 19-20**

**Resolution: Revise Resolution Detail:**

*Replace the caption of Figure 22 by the following texts:*

Figure 22-Time diagram for an example of interval-based mode with two ranging round sets in a ranging block

*Replace the first sentence at line 20 on page 43 by the following one:*

Figure 22 shows a time diagram for an example of interval-based mode with two ranging round sets in a ranging block.

* **CID-0242, Page 44, Sub-clause 6.9.7.3.2, line 23**

**Resolution: Revise Resolution Detail:**

*Replace the last sentence of the paragraph at line 22-23 by the following one:*

The controller may stop to transmit RIUM if the message from the controlee is successfully received at the correct time slot.

* **CID-0245, Page 44, Sub-clause 6.9.7.3.3, line 33**

**Resolution: Revise Resolution Detail:**

*Replace the “If the RTW is configured by the RIU IE…” by “If the RTW configuration is conveyed by the RIU IE…”*

* **CID-0041, CID-0177, CID-302, Page 78, Sub-clause 6.9.10, line 5**

**Resolution: Revise Resolution Detail:**

*Replace the two sentences of the paragraph at line 5-7 by the following one:*

In the current ranging round and any subsequent ranging round(s) following the RCM, the information exchange can be schedule-based or contention-based. Note that the number of ranging rounds configured by the same RCM is indicated by the Ranging Validity Rounds field of the ARC IE as described in 7.4.4.33.

* **CID-0179, Page 85, Sub-clause 7.4.4.33, line 9**

**Resolution: Revise Resolution Detail:**

*Replace the sentence at the line 8-9 on page 85 by the following one:*

If the field value is one, it indicates that ranging slots are scheduled for the exchange of deferred data frame(s) after the ranging cycle, which should typical be used to report certain measurement information, e.g., TOF, reply time, and AOA.

* **CID-0324, CID-325, Page 86, Sub-clause 7.4.4.32, line 24**

**Resolution: Revise Resolution Detail:**

*Replace the paragraph at the line 24-26 on page 86 by the following one:*

A group of ERDEVs engaged in a continuous ranging procedure that is characterized by a specific initial set of parameters is called a ranging session. A ranging session shall have only one controller and at least one initiator. Only the controller can configure the initial ranging parameters, and update them during a ranging session. The Session ID field contains a 4-octet session identifier which is unique to a session per controller. A separate set of STS seeds should be associated with each session.

* **CID-0045, Page 88, Sub-clause 7.4.4.43, line 12**

**Resolution: Revise Resolution Detail:**

*Replace the Table 22 on page 88 by the following one:*

**Table 22-RTW operation based on the fields of RTWISP and RTWMP**

|  |  |  |
| --- | --- | --- |
| **RTWMP field value** | **RTWISP field value** | **Meaning** |
| **0** | **0** | RTW operation is disabled for the next ranging round: a controller will send the RCM without any RTW.  |
| **1** | **0** | RTW operation is disabled for the next ranging round: a controller will send the RCM without any RTW. |
| **0** | **1** | RTW operation is enabled for the next ranging round: a controller will send the RCM at random timing within the RTW period. The size of RTW period is fixed at the value specified by the RTW Initial Size field. |
| **1** | **1** | RTW operation is enabled for the next ranging round: a controller will send the RCM at random timing within the RTW period. The size of RTW is determined by the RTW Initial Size field and RTW Multiplier field.  |

* **CID-0334, Page 96, Sub-clause 7.4.4.43, line 3**

**Resolution: Revise Resolution Detail:**

*Replace the last sentence of the paragraph at line 3 by the following one:*

The RRMC IE with reply time request (as described in 7.4.4.42) is typically inserted in the RFRAME that elicits a response frame embedded with the reply time.

* **CID-0013, Page 110, Sub-clause 8.2.15.1, line 2**

**Resolution: Revise Notes: the semantics might change Resolution Detail:**

*Replace the first paragraph of the last blank at the row of DcpsDuration*

For non-ERDEV, this time is in the number of symbols for which the transmitter and receiver will utilize the respective DPS indices, and/or the UWB channel specified by the ChannelNumber.

* **CID-205, CID-206, CID-208, Page 26, Sub-clause 6.9.4.2**

**Resolution: Revise Notes: the semantics may change Resolution Detail:**

*Replace the “dynamic preamble selection (DPS)” in 6.9.2 of the 802.15.4-2015 on page 117 by “dynamic preamble code and channel selection (DPS)”.*

*Replace the Figure 6-48 on page 118 of the 802.15.4-2015 by the following one:*



**Figure 6-48-A message sequence for ranging**

*Revise the paragraphs at line 20-45 of D3 as follows, the different texts compared with the base standard are marked with underline*

The top dotted box in Figure 6-48 illustrate the use of a data exchange to effect the coordination of the preambles and UWB channel to be used for a TWR exchange. The coordination of preambles and UWB channel is needed only when using the optional DPS capability of the PHY. As illustrated in the Figure 6-48, for the ERDEV, the information of the selected preamble code and channel number can be exchanged via the Ranging Channel and Preamble Code Selection IE (RCPCS IE) as described in 7.4.4.45. If optional DPS is not used, the communication sequence in the top box can be thought of as arranging for the recipient RDEV to become aware that a ranging exchange is desired and that the recipient next higher layer should enable ranging in the recipient PHY. The ranging procedures in 6.9.6 and 6.9.7 describe mechanisms provided by this standard through which this can be achieved. The second from the top dotted box in Figure 6-48 illustrates the use of the MLME-DPS.request, as described in 8.2.15.1, and the MLME-DPS.confirm, as described in 8.2.15.2. Use of these primitives is unique to the optional DPS mode of ranging.

The next higher layer of the ERDEV can optionally specify a future time when to apply the selected preamble code and/or channel number by the MLME-DPS.request (8.2.15.1), while the MAC sublayer shall report its status via MLME-DPS.confirm (8.2.15.2). The time interval between the assertion of the MLME-DPS.request and the new channel configuration, namely channel configuration interval (CCI), can be exchanged via the RCPCS IE (7.4.4.45). CCI has to be long enough for PHY to configure a channel switch. Note that it is the responsibility of the ERDEV’s next higher layer to apply the new channel configuration at the appropriate time for transmission and reception. It is also the responsibility of the next higher layer to ensure that the channel selection reflect the regional regulation. If the selected channel is not supported by the device, the DPS will fail, and the MLME-DPS.confirm primitive shall report Status parameter value of DPS\_NOT\_SUPPORTED.

*Revise the texts at line 29-33 on page 25 of D3 as follows:*

Upon the assertion of the MLME-DPS.confirm primitives, as illustrated in Figure 6-48, both of the ~~PHYs~~ devices have switched ~~from the normal length preamble symbols to long~~ to use the alternative preamble symbols and/or channel number selected by the MLME-DPS.request. This is desirable behavior intended to help hide the ~~PHY’s~~ transmissions from ~~malicious~~ other nodes in the network and protect the ~~PHYs~~ devices from transmission by ~~malicious~~ other nodes in the network.

*Revise the sentence at line 40-44 on page 25 of D3 as follows:*

Not shown in Figure 6-48, one responsibility of the application, if the optional DPS capability is used, is to initiate the MLME-DPS.request primitive on both sides of the ranging link at the completion of the ranging exchange~~. Most typically, this MLME-DPS.request primitive would be part of the finish-up activities and would have both TxDPSIndex and RxDPSIndex set to zero~~ to return the PHYs to using phyCurrentCode and phyCurrentChannel from the PIB.

*Revise the paragraph at line 9-12 of page 34 of D3 as follows:*

Similarly, when using DPS as described in 6.9.4, the RDEVs need to coordinate the preamble codes and/or UWB channel they are going to employ and again the secure private data communication capability of this standard may be used to transfer the preamble code indices and channel number between devices using the RCPCS IE (as described in 7.4.4.45).

*Delete the entire sub-clause 6.9.4.2, and use “6.9.4 Managing DPS”*

*Replace the “DCPS” by “DPS” throughout the texts, I list instances I found:*

* *Replace “DCPS Duration” at Figure 68 on page 97 by “DPS Duration”*
* *Replace “DCPS Duration field” by “DPS Duration field” at line 30, page 97*
* *Replace “DCPS” by “DPS” at line 7, page 98*
* *Replace “MLME-DCPS.request” by “MLME-DPS.request” at line 16&17, page 109*
* *Replace “DcpsDuration” at line 25, page 109, by “DpsDuration”*
* *Replace “DcpsDuration” in Table 8-36, page 110, by “DpsDuration”*
* *Replace “DCPS” by “DPS” at line 11, 12, 14 on page 110*
* *Replace “DCPS” by “DPS” at line 4-9 on page 111*

*On page 109, add the parameter TimeConfig to the MLME-DPS.request as follows, and add the row corresponding to it in the Table 8-36 on page 110:*

MLME-DPS.request (

 TxDpsIndex,

 RxDpsIndex,

 ChannelNumber,

 DpsDuration,

 ~~DpsIndexDuration~~

 TimeConfig

 )

**Table 8-36-MLME-DPS.request parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Type** | **Valid range** | **Description** |
| TimeConfig | Integer  | 0x000000-0xffffff | This parameter specifies the time in the units defined in 6.9.1.5 for the PHY to configure the selected DPS indices, and channel number.  |

*Revise the texts at line 3-9 on page 110 as follows:*

This primitive may also be generated to cancel a previously generated request to enable dynamic preamble code and channel selection. ~~the transmitter and receiver dynamic preambles. The use of the index for the transmitter and receiver is enabled or disabled exactly once per primitive request.~~

The MLME starts the timer that assures that the device returns to a normal operating state with ~~default~~ the previously configured preamble code and channel. ~~preambles if a following MCPS-DATA.request primitive does not occur.~~ After starting the timer, the MLME responds with a MLME-DPS.confirm primitive with the appropriate Status parameter.

*Revise the texts at line 10-18 on page 111 as follows:*

**8.2.15.3 MLME-DPS.indication**

**Change clause 8.2.15.3 as shown:**

The MLME-DPS.indication primitive indicates the expiration of the DpsDuration ~~DcpsIndexDuration and the resetting of the DPS values in the PHY~~. Resetting the DPS indices and UWB channel number in the PHY is the responsibility of the next higher layer.

The semantic of this primitive are as follows:

 MLME-DPS.indication ()

~~If a MCPS-DATA.request primitive is not received before the timer expires, the MLME issues the MLME-DPS.indication primitive to the next higher layer.~~