**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 to address assigned LB161 comments | |
| Date Submitted | 19 September 2019 | |
| Source | Billy Verso (Decawave Ltd), | billy.verso at decawave.com |
| Re: | Contribution to TG4z for IEEE 802.15.4z to address assigned LB161 comments | |
| Abstract | Contribution to TG4z amendment of IEEE Std 802.15.4-2015 | |
| Purpose | This submission is intended to address the indicated LB161 comment on draft 2 of the 802.15.4z amendment. This text herein is intended to be as ready as possible to integrate into IEEE Std 802.15.4z draft amendment to IEEE Std 802.15.4. | |
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| EXTRA NOTE(s): |

# CID r1-0607

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| 79 | 7.4.4.47 | Table 25 | Type 1 says that it is used as response to RFRT IE of Type 0, but Type zero was to disable fixed reply time, so it makes no sense to return this as an error for Type zero. | It would make sense to confirm that responding device will not use fixed reply time, which means text should say "will not use fixed reply time" instead of "cannot respond with a fixed reply time". Also spell out the "0" as "zero" |

The following change is required to address the comment:

In Table 25 change the Meaning description paragraph corresponding to type value 1 to say the following:

This RFRT IE is indicating (in response to an RFRT IE with Type value of zero) that the fixed reply time functionality in the sending device has been disabled as requested. In this case the Fixed Reply Time and Precision fields are not present.

# CID r1-0648

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| 83 | 8.2.5.1 | text | This is backward incompatible change that affects other things than just this. Timestamps are used in MLME-RIT-REQ.indication, MLME-RIT-RES.indication, and in some IEs. | What is the difference between the symbols and the RSTU? Is there real need to change this from Symbols to RSTUs? If so then other MLME and IEs should also be considered and similar changes made there, as now this makes incompatible change where some features might not be possible anymore as other MLME functions return Timestamps in symbols and other in RSTU. Perhaps it would be better to define that for all Timestamp calculation purposes the UWB PHY uses the symbol duration of RSTU? |

It was agreed that to address this comment we need to modify MLME-RIT-REQ.indication and MLME-RIT-RES.indication primitives to make their timestamp parameters be in RSTU for ERDEV. The required text to capture these changes is given here. The following text should be inserted into the revised draft:

**8.2.25.1 MLME-RIT-REQ.indication**

***Change Table 8-70 row of the Timestamp parameter as shown:***

**Table 8-70—MLME-RIT-REQ.indication parameters**

| Name | Type | Valid range | Description |
| --- | --- | --- | --- |
| Timestamp | Integer | 0x000000–0xffffff | For non-ERDEV: Optional. The time, in symbols, at which the command was received, as described in 6.5.2. The symbol boundary is described by macSyncSymbolOffset, as described in Table 8-81. The precision of this value shall be a minimum of 20 bits, with the lowest 4 bits being the least significant.  For ERDEV: Optional. The in RSTU (as defined in 6.9.1.5) corresponding to the start of the packet (preamble) in which the command was received. |

**8.2.25.3 MLME-RIT-RES.indication**

***Change Table 8-72 row of the Timestamp parameter as shown:***

**Table 8-72—MLME-RIT-RES.indication parameters**

| Name | Type | Valid range | Description |
| --- | --- | --- | --- |
| Timestamp | Integer | 0x000000–0xffffff | For non-ERDEV: Optional. The time, in symbols, at which the command was received, as described in 6.5.2. The symbol boundary is described by macSyncSymbolOffset, as described in Table 8-81. The precision of this value shall be a minimum of 20 bits, with the lowest 4 bits being the least significant.  For ERDEV: Optional. The in RSTU (as defined in 6.9.1.5) corresponding to the start of the packet (preamble) in which the command was received. |

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| 85 | 8.2.10.1 | Table 8-26 | Note, that the RxOnTime is 24-bit value, but some other places assume it could also be 32-bit value (MLME-RX-ENABLE.indication). | Specify that for non ERDEV the value is 24-bit value, and for ERDEV the value is 32-bit value. On the other hand even 24-bits allow 13 seconds, so that might be enough, not sure about the 20 bit precision tough. |

For RSTU 24-bits is enough for the timestamp values, so need to modify wherever it is suggesting that the value should be 32-bits. There is only one change required to address the comment as follows:

In Table 27 change the valid range for the timestamp parameter to “0x000000–0xffffff”

# CID r1-0687

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| 92 | 8.2.29 | 8 | In Beacon Enabled mode to time ranging activities in the beacon transmitting device it is necessary to have a Timestamp report (in RSTU) of the Beacon Transmission (start). I don’t think there is a primitive for this in the base standard currently. | Add a beacon TX report primitive with Timestamp parameter giving the RSTU time for the frame start (start of preamble) of the transmitted beacon frame. |

This comment is resolved by the following text:

***Insert the following new subclause (8.2.18.3) after 8.2.18.2:***

**8.2.18.3 MLME-****BEACON.indication**

The semantics of this primitive are as follows:

MLME-BEACON.indication (

Timestamp,

)

The primitive parameters are defined in Table 1.

Table 1— MLME-BEACON.indication parameters

| Name | Type | Valid range | Description |
| --- | --- | --- | --- |
| Timestamp | Integer | 0x000000–0xffffff | For non-ERDEV: This parameter reports the time, in symbols, at which the beacon was transmitted. The symbol boundary is described by macSyncSymbolOffset, as described in Table 8-81. The precision of this value shall be a minimum of 20 bits, with the lowest 4 bits being the least significant.  For ERDEV this shall be the time in RSTU (as defined in 6.9.1.5) corresponding to the start of the packet (preamble) for the transmitted beacon frame. |

The MLME-BEACON.indication primitive is optional for non-ERDEV. It is generated by the MLME to inform the next higher layer that a beacon frame has been sent.

***[END]***