**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | Draft C comment assignments – Resolutions I | |
| Date Submitted | 27th February 2024 | |
| Source | Billy Verso (Qorvo), | billy.verso at qorvo.com |
| Re: | Comment Resolutions | |
| Abstract | Comment Resolutions for selected comments on the Pre-Ballot Draft C of the P802.15.4ab amendment. | |
| Purpose | This document provides text changes intended to be part of the final IEEE Std 802.15.4ab (amendment to IEEE Std 802.15.4), as part of resolving selected consolidated comments spreadsheet (doc 15-24-0010) that have been assigned to the author to resolve. | |
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***Comments addressed here:***

[1 CID # 73](#_Toc159942288)

[2 CID # 679](#_Toc159942289)

[3 CID # 180](#_Toc159942290)

[4 CID # 112](#_Toc159942291)

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[6 CID # 293](#_Toc159942293)

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# CID # 73

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 73 | 42 | 10.38.1 | 14 | What does "initiate the UWB MMS packet exchange" refer to? Is that session initial and configuration exchange? If yes, that can be done OOB in NBA-UWB-MMS mode. If no,, then it is essentially control and clock offset estimation, and should not be called "initiate" | Remove the phrase "initiate the UWB MMS packet exchange" from all three modes. |

Discussion: This is part of the introduction in 10.38 *UWB Multi-millisecond (MMS) operation*

This is referring to instigating the switch from the control PHY mode to the ranging PHY mode. This is worth mentioning here as it is significant element of the MMS functionality. The phrasing is better in the second dash-bullet where it says: “initiate switching to the UWB MMS packet mode”, (i.e., from UWB data mode where SP0 packets are probably being used). The proposed resolution below is to update the first and third dash bullets to clarify the meaning.

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| Proposed  **Disposition** | Proposed **Disposition Detail** |
| **Revised** | In the first dash bullet, change the phrase to “initiate switching into UWB for the UWB MMS packet exchange”, and, in the third dash bullet, change the phrase to “initiate switching to UWB for the UWB MMS packet exchange”, and delete the word “appropriately” from the end of that sentence. |

# CID # 679

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 679 | 135 | 10.41.2 | 4 | Is three-way handshake necessary. If device A included the RDMS in the first step itself, the process could be completed in a two-message exchange. | complete in a two-message exchange. |

Discussion: The three-way handshake allows each receiver to independently tune what it requests based on the remote TX capability. The whole text of this section is written from the point of view of an independent symmetric negotiation of the parameters for each TX to RX path. This requires the three-message exchange. Propose not to develop any alternative additional mechanism at this time.

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| Proposed  **Disposition** | Proposed **Disposition Detail** |
| **Rejected** | A three-message exchange is necessary to allow an independent symmetric negotiation of the parameters for each TX to RX path. |

# CID # 180

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 180 | 139 | 10.41.2 | 9 | We don't need "only" in "shall only" - just "shall" is sufficient (and correct). | Delete "only"; |

Discussion: Seems reasonable to agree with commenter.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Accepted** |  |

# CID # 112

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 112 | 139 | 10.41.2 | 11 | SYNC PSR values should be limited to the set of numbers defined in table 37. | Change to: "… and a SYNC PSR from table 37 that is no shorter than that requested by the receiver for the selected payload data rate and …" |

Discussion: While perhaps not strictly necessary, there is some merit in stating this explicitly, so let us accept.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **ACCEPTED** |  |

# CID # 171

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 171 | 155 | 16.1. | 7 | Entire 16.1 clause: very sloppy use of "shall" without precise definitions. Making this a meaningless statement. This clause is an introduction. The specific requirements are given in subsequent clauses. | Replace "shall support" with "supports" throughout 16.1 |

Discussion: This is a “General” clause giving requirements, (not an introduction). The purpose of this line is to define the device type label “HRP-EMDEV”. It is important to say that the HRP-EMDEV shall support the HRP-ERDEV mandatory features, which is not stated elsewhere. The term “shall support” is commonly used in the standard. It appears 48 times in the 4me draft, and often in similar clauses. This phrasing has been used previously and is accepted and well understood by the participants the WG and in TG4ab. Propose to leave this phrasing unchanged, and to leave/keep the 4z and earlier usages of this phrase that are in the base standard.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Rejected** | This general clause is specifying requirements using phrasing that is also used in the base standard and is well understood. |

# CID # 293

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 293 | 179 | 16.4.5 | 6 | Transmit PSD mask needs to be defined | As in comment |

Discussion: The Transmit PSD mask is defined in the base standard and does not need to change, but I do see we have a heading in the draft without any text, so I propose to remove this heading to avoid people thinking that there is something missing under this heading.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Revised** | Remove the unused heading. |

# CID # 880

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 880 | 172 | 16.3.4.2.3 | 9 | "More clarity may be needed here. What are the EMDEV data rates? E.g., what is the difference between the existing ERDEV k=7 data rates at 7.8 and 31.2 Mbps and the EMDEV versions? Do we now have 2 names for the same data rates? Would it be better to state that the optional k=7 ERDEV rates are mandatory in EMDEV?  Basic issue is that there are 2 names for the same thing. |  |

Discussion:

These modulations with K=7 convolution code (giving speeds of 7.8 Mb/s and 31.2 Mb/s modulation) are optional for the ERDEV introduced and specified by 4z. The 4z ERDEV legacy behavior should remain intact, 4ab should not modify this. In 4ab we are making these K=7 rates mandatory for the EMDEV.

It is not really two names for the same thing, but rather two categories of device with some overlap in functionality, although they are different in that the 4z ERDEV behavior is optional while the 4ab EMDEV behavior is mandatory (and has additional rates and behaviors also, etc.).

Propose not to change anything with respect to this.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Rejected** | This is not a case of two names for the same thing, but rather two categories of device with some overlap in functionality. The text aims to keep the specification for the (4z) legacy ERDEV device’s optional modulation modes intact, while adding the new 4ab EMDEV device type with these as mandatory modulations modes. |

# CID #’s 466, 467, 468

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 466 | 172 | 16.3.4.2.2 | 5 | It should be "16 pulses per symbol" instead of "16 pulses per coded bit" | As in the comment |
| 467 | 174 | 16.3.4.3.1 | 5 | It should be "32 pulses per symbol" instead of "32 pulses per coded bit" | As in the comment |
| 468 | 175 | 16.3.4.3.2 | 12 | It should be "64 pulses per symbol" instead of "64 pulses per coded bit" | As in the comment |

Discussion: The phrase “pulses per coded bit” appears in seven places in sub-clause 16.3.4, four of which have come from the base standard (introduced by 4z). I believe that “pulses per symbol” is clearer in meaning so I propose that we change all seven occurrences to “pulses per symbol”. There is no ambiguity since for each modulation rate there is a separate table giving the mapping of the *g*0 and *g*1 encoder output bits into the symbol.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Revised** | Change “pulses per coded bit” to “pulses per symbol” in all seven places in sub-clause 16.3.4 where this phrase appears. |

# CID # 474

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| **Index** | **Page** | **clause** | **Line** | **Comment** | Proposed Change |
| 474 | 192 | Bibliography | 5 | The content of B1 does not include the BPM scheme | As in the comment |

Discussion: Rather than trying to revise this older submission necessitating lots of rework, propose instead to add an additional reference to the doc that introduced the BPM modulation and outlined its advantages.

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| Proposed  **Disposition** | Proposed:  **Disposition Detail** |
| **Revised** | Add new bibliography entry: “Revised UWB wake-up radio modulation”, IEEE 802.15 document 15-23-0516-00-04ab, 2023.  And, add sentence at the end of the 2nd paragraph of 16.8.1, as follows: “The advantages of the BPM scheme are outlined in [BX].”, where BX is the new bibliography entry number. |