**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | **DraftC comment resolution** |
| Date Submitted | March 2024 |
| Sources | Jinjing Jiang (Apple Inc.)  jinjing@apple.com |
| Re: |  |
| Abstract |  |
| Purpose | To propose resolution for MMS related comments for “P802.15.4ab™/D (pre-ballot) C Draft Standard for Low-Rate Wireless Networks” . |
| 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 “Sources” field above.It is offered as a basis for discussion and is not binding on the contributing individuals. The material in this document is subject to change in form and content after further study. The contributors reserve the right to add, amend or withdraw material contained herein. |

Abstract

This submission contains the proposed comment resolutions for the CIDs 17, 18, 37, 44, 45, 46, 47, 287, 365, 366, 367, 368, 373, 379, 559, 560, 566, 567, 568, 569, 570, 622, 711, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 782, 783, 788, 789, 913, 914, 915.

R0: initial document

R1: additional CIDs added

R2: add CID 44, 45; remove CID 19, 687, 775, 786 (19 and 687 are reassigned, 775 and 786 are already resolved); revised CID 622.

# CID 17

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Li-Hsiang Sun | 17 | Technical | 60 | 10.38.9.1 | 11 | which message ID and message control correspond to 'Ranging Initiation Message'? | define the control message shown in figure 37, 38 with specific message IDs and message control values | Agree in principle. Proposed resolution clarifies that the ranging initiation message is One-to-many Poll compact frame. |

**Resolution:**

15.4ab Editor: Please change the line 10 of the subclause as shown below:

The ranging initiation message uses One-to-many Poll Compact frame, whose format is detailed in 10.38.10.12.

# CID 18

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Li-Hsiang Sun | 18 | Technical | 82 | 10.38.10.12 | 19 | In contention-based one-to-many ranging, there is no contention for the 1st responder. How the first responder is determined? | add first responder identity in one-to-many Poll frame with msg ctrl =0x50 | Reject. |

**Discussion:**

In contention-based ranging, each responder chooses a random number uniformly in [0, total number of subrounds) to decide which subround it will send response back. The first sub-round could be empty.



# CID 37

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Li-Hsiang Sun | 37 | Technical | 82 | 10.38.10.12 | 11 | are msg ctrl 0x30, 0x40 needed because initiator report are negotiated in initialization and setup phase | remove these two msg ctrls | Reject. |

**Discussion:**

Inititlizaiton and setup phase is optional. It is necessary that these are configured in ranging initiation message.

# CID 44

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Jinjing Jiang | 44 | Editorial | 81 | 10.38.10.12 | 21-23 | complete the sentence | The Number of Respondrees fields shall be set as the numbers of respodners that participate in the ranging phase minus 1. The Slots Per Responder field shall be set as the number of slots for each sub-round minus 1. The Responder Address list contains the list of Addresses of the Responders that are participating the ranging phase, in which every address is 3 octets. | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 21-23 of the subclause as shown in the proposed change.

# CID 45

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Jinjing Jiang | 45 | Editorial | 82 | 10.38.10.12 | 3 | complete the sentence | The number of Responders field specifies the number of responders that will be participatiing the ranging phase, which shall be set as the number of responders minus 1. | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 3 of the subclause as shown in the proposed change.

# CID 46

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Jinjing Jiang | 46 | Editorial | 82 | 10.38.10.12 | 8-10 | complete the sentence | The Responder Address field contains the address of the responder that participates the ranging phase. The Start Slot Index fields shall be set as the index of the first slot of the sub-round. The End Slot Index shall be set as the index of the last slot of the sub-round. | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 21-22 of the subclause as shown in the proposed change.

# CID 47

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Jinjing Jiang | 47 | Editorial | 82 | 10.38.10.12 | 21-22 | complete the sentence | The Number of Sub-Rounds fields shall be set as the number of sub-rounds that responders can contend minus 1. The Size of Sub-Rounds fields is the size of the Sub-Round minus 1. | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 21-22 of the subclause as shown in the proposed change.

# CID 287

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carlos Aldana | 287 | Technical | 60 | 10.38.9.1 | 8 | the following text “divides the ranging slots in the ranging round into multiple sub-rounds” should be replaced with “divides the ranging rounds into multiple sub-rounds” | As in comment | Agree. See the resolution below. |

**Resolution:**

15.4ab Editor: Please change the line 8 of the subclause as shown below:

This includes a list of responders, determines how the initiator ranges with these responders, divides the ranging rounds into multiple subrounds and how the initiator completes the ranging phases with each responder during each sub-round.



# CID 379

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Bin Qian | 379 | Technical | 89 | 10.38.10.14 | 19 | Change “For the One-to-many REPORT from responder Compact frame” to “For the One-to-many Responder Report Compact frame” | As in the comment | Agree. See the resolution below. |

**Resolution:**

15.4ab Editor: Please change the line 19 of the subclause as shown below:

For the One-to-many Responder Report Compact frame with Message Control field value 0x10, at least one of the NB Channel Map, Management PHY Configuration, Management MAC Configuration, Ranging PHY Configuration, or Ranging MAC Configuration fields shall be present in the Message Content field.

# CID 559

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Youngwan So | 559 | SAMSUNG | 33 | 10.31.9.3 | 13 | The sentence should be removed as it is alredy covered by line #14. It is accepted in previous meeting. | Delete line #13. | Accept. |

**Resolution:**

15.4ab Editor: Please delete the line 13 of the subclause.

# CID 560

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Youngwan So | 560 | SAMSUNG | 96 | 10.38.10.20.2 | 20 | In the Figure112, “Number of rounds in the block” seems to have redundancy. Just “Number of rounds” is enough. | Change  “Number of rounds in the block”  to “Number of rounds” | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 20 of the subclause as in the proposed change.

# CID 566

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Shimi Shilo | 566 | Huawei | 42 | 10.38.1 | 8 | put comma before and after ‘each sent in a separate millisecond’. | Put comma before and after ‘each sent in a separate millisecond’. | Revised. |

**Resolution:**

15.4ab Editor: Please change the line 8 of the subclause as the following:

The MMS technique accumulates the channel impulse response (CIR) estimate from a sequence of fragments, which are sent in separate milliseconds to utilize the allowed per millisecond regulatory transmit power budget.

# CID 567

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Shimi Shilo | 567 | Huawei | 43 | 10.38.2 | 25 | replace ‘to allow common text cover…’ with ‘to allow a common text to cover…’ | replace ‘to allow common text cover…’ with ‘to allow a common text to cover…’ | Revised |

**Resolution:**

15.4ab Editor: Please change the line 13 of the subclause as the following.

To allow common text to cover both approaches, the term management PHY is used to mean either the O-QPSK PHY or the UWB PHY, while the term ranging PHY is referring to the UWB PHY only.

# CID 568

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Shimi Shilo | 568 | Huawei | 58 | 10.38.8.3 | 6 | It is not clear what is meant by 'consecutively', better rephrase to make it clearer. | Replace with 'even if the same channel is used in consecutive slots'. | Accept. |

**Resolution:**

15.4ab Editor: Please change the line 6 of the subclause as the proposed change.

# CID 569

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Shimi Shilo | 569 | Huawei | 60 | 10.38.9.1 | 7 | The paragraph starting with "This includes a list of…" is not very clear, and should be rephrased, assuming 'this' corresponds to the 'configuration parameters'. | Replace with 'The configuration parameters include a list of responders, a set of parameters used to determine how the initiator ranges with these responders, a division of the ranging slots in the ranging round into multiple sub-rounds and a description of how the initiator completes the ranging phrases with each responder during each sub-round'. | This is a general description and not aimed to be very precise. Revised. |

**Resolution:**

15.4ab Editor: Please change the line 7 of the subclause as the following.

The configuration parameters includes a list of responders, determines how the initiator ranges with these responders, divides the ranging slots in the ranging round into multiple subrounds and how the initiator completes the ranging phases with each responder during each sub-round. The message format is detailed in 10.38.10.

# CID 570

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Shimi Shilo | 570 | Huawei | 60 | 10.38.9.1 | 17 | Replace 'conduct measurement' with 'conduct a measurement…'. | Replace 'conduct measurement' with 'conduct a measurement…'. | Revised. |

**Resolution:**

15.4ab Editor: Please change the line 17 of the subclause as the following.

If the measurement report phase is not included in the ranging sub-round, the initiator shall reserve slots at the end of the ranging round to conduct the measurement report phase for all the responders.

# CID 622

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Rojan Chitrakar | 622 | Technical | 60 | 10.38.9.1 | 22 | How is start of contention-based one-to-many ranging signaled? Is it via a specific variant of the one-to-many Poll compact frame? If yes, which ones? Else how does responder know that it should transmit the Response frame first? | Specify the variant of the one-to-many Poll compact frame that initiates contention-based one-to-many ranging. | It is indicated in One-to-many Poll frame, message control variant 0x50. See the proposed resolution for clarification. |

**Resolution:**

15.4ab Editor: Please change the line 22 of the subclause as shown below:

For contention-based one-to-many ranging, if the ranging initiation message uses One-to-many Poll Compact frame with Message Control field value 0x50, the ranging initiation message defines the number of ranging sub-rounds, the size of each ranging sub-rounds, and during each ranging sub-round, a responder sends its Response frame after receiving the Poll frame. If the ranging initiation message uses One-to-many Poll Compact frame with Message Control field value 0x60, the order of Poll and Response frames in a ranging sub-round is switched during the sub-round that is not the first sub-round. If no valid Response frame is received from a responder, the initiator does not send the Poll and skips the sub-round without sending the UWB fragments. The responder not seeing the poll also skips sending the UWB fragments and the measurement report. This is illustrated in Figure 38 where when the response frame is not received correctly, the frames with dotted grey box are not sent.

# CID 711

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carl Murray | 711 | Technical | 60 | 10.38.9.2 | 22 | Can you do this? For example what happens to short term parameters when the order of Poll and Response are switched. |  | Reject. |

**Discussion:**

During contention-based ranging, there is no short-term parameters adjustment for the following Poll frames. Therefore, the order switching of Poll and Response frame still works. This is mainly optimization in terms of power saving and spectrum efficient.

# CID 765

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carl Murray | 765 | Technical | 82 | 10.38.10.12 | 11 | This description is incomplete and is open to many interpretations. | Add complete description | not sure the interpretations? Maybe describe as the frame sequence difference, adding more description. |

**Resolution:**

15.4ab Editor: Please change the line 11 of the subclause as shown below:

In a one-to-many session, if One-to-many Poll compact frame with Message Control field value 0x30 is used, during each sub-round, both the initiator and responder devices are to send a measurement report after RMS exchange, while if One-to-many compact frame with Message Control field value 0x10 is used with the same Message Content only the responder device sends a measurement report during each sub-round.

# CID 768

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carl Murray | 768 | Technical | 83 | 10.38.10.12 | 1 | This description is incomplete and is open to many interpretations. | Add complete description | not sure the interpretations? Maybe describe as the frame sequence difference, adding more description. |

**Resolution:**

15.4ab Editor: Please change the line 11 of the subclause as shown below:

During a contention-based one-to-many session, if the One-to-many Poll compact frame with the Message Control field value 0x50 is used, the initiator sends One-to-many Poll compact frame (Message Control Field value 0x00) first in each subround that is not the first one, the responder that randomly chooses the sub-round follows with the One-to-many Response compact frame, while if the One-to-many Poll compact frame with the Message Control field value 0x60 is used, the responder that randomly chooses this sub-round that is not the first one sends the One-to-many Response compact frame first and the initiator sends the One-to-many Poll compact frame if it receives a response frame correctly.

# CID 788

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carl Murray | 788 | Technical | 86 | 10.38.10.12 | 21 | This description is incomplete and is open to many interpretations. | Add complete description | not sure the interpretations? Maybe describe as the frame sequence difference, adding more description. |

**Resolution:**

15.4ab Editor: Please change the line 11 of the subclause as shown below:

In a time-efficient one-to-many session, if One-to-many Poll compact frame with Message Control field value 0xA0 is used, during each sub-round, both the initiator and responder devices are to send a measurement report in the report phase, while if One-to-many compact Poll frame with Message Control field value 0x90 is used with the same Message Content only the responder devices send a measurement report during each sub-round.

# CID 789

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resoluton** |
| Carl Murray | 789 | Technical | 87 | 10.38.10.13 | 3 | It doesn't convey short term operating parameters | Change  … convey short term operating parameters.  To  … convey short term operating parameter requests. | Agree. |

**Resolution:**

15.4ab Editor: Please change the line 11 of the subclause as shown below:

This is the response sent by a responder during the control phase in one-to-many ranging, this serves to enable carrier coherent transmissions from the responder to the initiator device and may also convey short term operating parameters requests. The One-to-many Response Compact frame shall be formatted as shown in Figure 90.

# CID 782, 913

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Carl Murray | 782 | Technical | 86 | 10.38.10.12 | 6 | Field description missing | Add field description | See CID 913. |
| Jinjing Jiang | 913 | Editorial | 86 | 10.38..10.12 | 6 | complete the sentence | The Start Slot Index fields shall be set as the index of the first slot of the sub-round. | Agree. |

**Resolution:**

15.4ab Editor: Please change the line 6 of the subclause as in the proposed change.

# CID 914

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Jinjing Jiang | 914 | Editorial | 86 | 10.38.10.12 | 19 | complete the sentence | The Start Slot Index fields shall be set as the index of the first slot of the sub-round. | Agree, addressed in 15-24-0109-01-04ab-proposed-comments-resolution-on-one-to-many-ranging.docx. |

# CID 783, 915

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Carl Murray | 783 | Technical | 86 | 10.38.10.12 | 7 | Field description missing | Add field description | See CID 915. |
| Jinjing Jiang | 915 | Editorial | 86 | 10.38.10.12 | 7 | complete the sentence | The End Slot Index shall be set as the index of the last slot of the sub-round. | Agree. |

**Resolution:**

15.4ab Editor: Please change the line 7 of the subclause as in the proposed change.

# CID 365, 366, 367, 368, 373, 758, 759, 760, 761, 762, 763, 764, 766, 767, 769, 770

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| **Name** | **Index #** | **Category** | **Page** | **Sub-clause** | **Line #** | **Comment** | **Proposed Change** | **Proposed Resolution** |
| Bin Qian | 365 | Technical | 81 | 10.38.10.12 | 21-23 | The description is not complete | As in the comment | Agree. Resolved in CID 44, 45, 46, 47, 913, 914, 915. |
| Carl Murray | 758 | Technical | 81 | 10.38.10.12 | 21 | Field description missing | Add field description | Agree. Resolved in CID 44, 45, 46, 47, 913, 914, 915. |

**Discussion:**

These comments are resolved in CID 44, 45, 46, 47, 913, 914, 915.