**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Proposed Resolutions for CIDs: 505, 506, 519, 520 |
| Date Submitted | November 2024 |
| Sources | Huan-Bang Li and Takeshi Matsumura (NICT, Japan),Alex Krebs (Apple) |
| Re: |  |
| Abstract | This document proposes resolutions for comments with CIDs of 505, 506, 519, and 520. |
| Purpose | To propose resolutions to comments for “*P802.15.4ab™/D01 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. |

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# CID #505 (Accept)

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| Tero Kivinen | 505 | 84 | 10.38.9.3.10 | 4 | Text description of how to map different values to different tables is hard to parse, especially if new values are added in the future.  | Change the text to table, where first column is Sequence Code Index and second is description, i.e., first row will say "9-24" and description will say "Length-127 ternary codes from Table 16-8" etc.  | Accept. |

**Current Text:**

The Sequence Code Index field specifies the symbol to use for the RSF, where Sequence Code Index field values 9 to 24 select length-127 ternary codes from Table 16-8, Sequence Code Index field values 25 to 32, select length-91 ternary codes from Table 16-9, and Sequence Code Index field values 33 to 48 select length-128 sequences from Table 63, and other values are reserved.

**The proposed resolution**

Replace the yellow-highlighted text by the blue-highlighted text and Table A as follows.

The Sequence Code Index field specifies the symbol to use for the RSF. It shall have one of the values to select corresponding ternary codes or sequences as described in Table A.

Table—A Values of Sequence Code Index field in the Ranging PHY Configuration

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| --- | --- |
| **Sequence Code Index field value** | **Description** |
| 9-24 | Each value selects a corresponding length-127 ternary code from Table 16-8 |
| 25-32 | Each value selects a corresponding length-91 ternary code from Table 16-9 |
| 33-48 | Each value selects a corresponding length-128 sequence from Table 63 |
| Others | Reserved |

# CID #506 (Accept)

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| Tero Kivinen | 506 | 84 | 10.38.9.3.10 | 10 | The text here is again hard to parse, make it table.  | Add this information to the previous table for Sequence Code Index values, i.e., instead of description to 2nd column would be sequence code index reference, and there would be third field preamble code index which would then explain what preamble code index shall be used when using specific sequence code index value. | Accept. |

**Current Text:**

In UWB driven UWB MMS, the preamble code index used for the SYNC and SFD in the HRP UWB PHY MMS packets is based on the Sequence Code Index field of the Ranging PHY Configuration field defined in 10.38.9.3.10.

Sequence Code Index field values 25 to 32, directly indicate the UWB fragment preamble code index, while for Sequence Code Index field values 9 to 24 and 33 to 48, the UWB fragment preamble code index is selected by the expression: 25 + (Sequence Code Index field value - 1) modulo 8, i.e., selecting one of the length-91 ternary codes from Table 16-9.

**The proposed resolution**

Replace the yellow-highlighted text by the blue-highlighted text and Table B as follows.

Correspondence between the preamble code index and the Sequence Code Index field value is given in Table B, where the preamble code index selects one of the length-91 ternary codes from Table 16-9.

Table—B Correspondence between the preamble code index and the Sequence Code Index field values

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| --- | --- | --- |
| **Sequence Code Index field value** | **preamble code index** | **Description** |
| 9-24 | 25 + {(Sequence Code Index field value - 1) modulo 8} | Each preamble code index selects a corresponding length-91 ternary code from Table 16-9 |
| 25-32 | Same as the Sequence Code Index field value |
| 33-48 | 25 + {(Sequence Code Index field value - 1) modulo 8} |

# CID #519 (Accept)

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| Tero Kivinen | 519 | 88 | 10.38.9.3.17 | 8 | This information from mapping 1-8 and 14, and 15 is now in at least 4 different locations. Repeating same information in multiple locations is bad.  | Create a table that provides mapping from the values to references where the modulation modes can be found, i.e. for values 1-8 the description would say modulation modes 1-8 from table 58. etc. Then change Control Phase Config field, Report Phase Config fiield, macMmsControlPhaseMode, and macMmsReportPhaseMode descriptions to use that same table. | Accept. |

**Current Text:**

The Control Phase Config field specifies the PHY layer modulation for the MMS control phase. Control Phase Config field values 1 to 8 select a modulation mode from Table 58 (also numbered 1 to 8), value 14 selects UWB modulation according to set #1 from Table 74, while the value 15 selects UWB modulation according to set #2 from Table 74. All other Control Phase Config field values are reserved.

The Report Phase Config field specifies the PHY layer modulation for the MMS report phase. Report Phase Config field values 1 to 8 select a modulation mode from Table 58, value 14 selects UWB modulation according to set #1 from Table 74, while the value 15 selects UWB modulation according to set #2 from Table 74. All other Report Phase Config field values are reserved.

**The proposed resolution**

Replace the yellow-highlighted text by the blue-highlighted text and Table C as follows.

The Control Phase Config field specifies the PHY layer modulation for the MMS control phase. It shall have one of the values to select a modulation mode or operating parameters for the UWB PHY as described in Table C.

The Report Phase Config field specifies the PHY layer modulation for the MMS report phase. It shall have one of the values to select a modulation mode or operating parameters for the UWB PHY as described in Table C.

Table—C Selection of narrow band modulation modes and operating parameters for the UWB PHY

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| --- | --- |
| **Values of Control Phase Config field, Report Phase Config field, macMmsControlPhaseMode, or macMmsReportPhaseMode** | **Description** |
| 1-8 | selects a corresponding modulation mode from Table 58 |
| 14 | selects UWB modulation according to set #1 from Table 74 |
| 15 | selects UWB modulation according to set #2 from Table 74 |
| Others | Reserved |

**Current Text (**description for macMmsControlPhaseMode in Table 20**):**

Modulation for the MMS control phase.

Values 1–9 relate to Table 58 and select the modulation for the O-QPSK PHY in the control phase.

Value 14 selects operating parameter set #1 and value 15 selects operating parameter set #2 from Table 74 for the UWB PHY in the control phase.

**The proposed resolution**

For the description for macMmsControlPhaseMode in Table 20, replace yellow-highlighted text by the blue-highlighted text as follows.

Modulation for the MMS control phase.

Selection of narrow band modulations or operating parameters for the UWB PHY in the control phase obeys Table C.

**Current Text (**description for macMmsReportPhaseMode in Table 20**):**

Modulation for the MMS report phase.

Values 1–9 relate to Table 58 and select the modulation for the O-QPSK PHY in the control phase.

Value 14 selects operating parameter set #1 and value 15 selects operating parameter set #2 from Table 74 for the UWB PHY in the control phase.

**The proposed resolution**

For the description for macMmsReportPhaseMode in Table 20, replace yellow-highlighted text by the blue-highlighted text.

Modulation for the MMS report phase.

Selection of narrow band modulations or operating parameters for the UWB PHY in the control phase obeys Table C.

# CID #520 (Accept)

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| Tero Kivinen | 520 | 88 | 10.38.9.3.17 | 18 | This mapping from sequence control index field is already defined in the 10.38.9.3.10.  | After the table of mapping from sequence code index values to preamble code index is added there, this text can directly refer to that table, without copying the text here. | Accept. |

**Current Text:**

When UWB modulation is selected for the control and/or the report phase, the preamble code index used for these UWB packets is based on the Sequence Code Index field as carried in the Ranging PHY Configuration field defined in 10.38.9.3.10. Sequence Code Index field values 25 to 32, directly indicate the UWB packet preamble code index, while for Sequence Code Index field values 33 to 48, the UWB packet code index is selected by the expression: 25 + (Sequence Code Index field value - 1) modulo 8, i.e., selecting one of the length-91 ternary codes from Table 16-9.

**The proposed resolution**

Replace the yellow-highlighted text by the blue-highlighted text as follows.

When UWB modulation is selected for the control and/or the report phase, the preamble code index used for these UWB packets is based on the Sequence Code Index field as carried in the Ranging PHY Configuration field defined in 10.38.9.3.10. Correspondence between the preamble code index and the Sequence Code Index field value is given in Table B, where the preamble code index selects one of the length-91 ternary codes from Table 16-9.