**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) | |
| Title | D02 Miscellaneous Comment Resolutions III | |
| Date Submitted | 10 June 2025 | |
| Source | Billy Verso (Qorvo), | billy.verso at qorvo.com |
| Re: | IEEE P802.15.4ab | |
| Abstract | Comment Resolutions for selected comments on the LB213 / P802.15.4ab D02. | |
| 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 comments from the consolidated spreadsheet (DCN 15-25-0174) that have been assigned to the author to resolve. | |
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| Comments addressed here |

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1. **Comment Index #s 185 and 294**

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| --- | --- | --- | --- | --- | --- |
| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 185 (Mickael) | 102 | 10.39.11.1.3.7 | 3 | The code for SYNC & SHR is now the same as the MMS code index for lenghth-127 and length-91 ternary code. Previously it was length-91 ternary code for both | add a line in table 13: 9-24 |ci = ((Sequence Code Index field value - 1) modulo 8) + 25 |
| 294 (Li-Hsiang) | 107 | 10.39.11.1.3.13 | 3 | "When UWB modulation is selected for the control and/or the report phase, the SHR preamble code used for these UWB packets is determined based on the Sequence Code Index field as per Table 13" If sequence code index is 9~24, it does not seem right length 127 SHR is used for 1.95Mbps UWB PPDU | Clarify if sequence code index is 9~24, in MMS packet length 127 code is used, but in ctrl/report UWB packet SHR, length 91 code is used |

**Discussion:**

These two comments relate to Table 13 in D02:

A screenshot of a computer code

AI-generated content may be incorrect.

The Sequence Code Index field is a subfield of the Ranging PHY Configuration field. The Sequence Code Index field value is specifying the sequence/symbol to use for RSF fragments. Where code indexes in the range 9–24 select length-127 BPRF mode symbols, code indexes in the range 25–32 are length-91 7 HRPF mode symbol, and code indexes in the range 33–48 select the new Length-128 Complementary Set based symbols.

Table 13 is taking the (RSF) Sequence Code Index field value and mapping it to select two other items for UWB driven MMS:

1. the code for the initial “Sync and SFD” fragment, and,
2. the code for the SHR of the UWB Data frames used in the control and reporting phases.

For usage (a) the correct/agreed handling is to map complementary set codes (33 – 48) into a length-91 UWB, and where the RSF code is already using a length-91 or length-127 codes, to use this code directly in forming the SYNC+SFD fragment. Table 13 is reflecting this correctly.

For usage (b), we have already stipulated that the data packets use the 1.95 Mb/s rate. This implies using an HPRF mode packet, i.e., a packet with SHR symbols using a length-91 code index (in the range 25-32). Table 13 in D02 is **NOT** correctly providing for this. Where the (RSF) Sequence Code Index field value is a length-127 BPRF code index we need to map these into length-91 code indexes for the data packet SHR. Table 13 needs to be modified to do this.

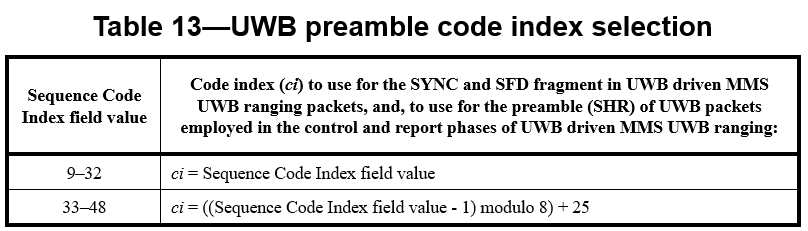
Note, on foot of previously resolved comments (index #’s 506 and 240), the caption and column headings of Table 13 are modified with respect to D02.

Table 13 in D02:

A screenshot of a computer code

AI-generated content may be incorrect.

Table 13 after applying resolved comments index #’s 506 and 240:



The proposed resolution here, to Comment Index #s 185 and 294, further modifies Table 13 as shown below:

**Proposed Disposition:** Revised.

**Disposition Detail:** Replace Table 13 with the following:

**Table 13—UWB preamble code index selection**

|  |  |  |
| --- | --- | --- |
| **Sequence Code Index field value** | **Code index (*ci*) to use for the SYNC and SFD fragment in UWB driven MMS UWB ranging packets:** | **Code index (*ci*) to use for the SHR of UWB packets employed in the control and report phases of UWB driven MMS UWB ranging:** |
| 9–24 | *ci* = Sequence Code Index field value | *ci* = ((Sequence Code Index field value - 1) modulo 8) + 25 |
| 25–32 | *ci* = Sequence Code Index field value | |
| 33–48 | *ci* = ((Sequence Code Index field value - 1) modulo 8) + 25 | |

# Comment Index # 241

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| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 241 (Pooria) | 107 | 10.39.11.1.3.13 | 8 | This sentence is unclear. Please clarify what is meant by "shall match the PHY in use in the current MMS UWB mode" | Please clarify what is meant by "shall match the PHY in use in the current MMS UWB mode" |

**Discussion:**

This is referring to the second (highlighted) paragraph below:

A close-up of a text

AI-generated content may be incorrect.

The first paragraph (not highlighted) is saying that the same PHY shall be used for the report phase and control phase.

The intent of the (highlighted) second paragraph is to allow the initialisation/start-up stage Start of Ranging frame be able to select either the UWB PHY or the O-QPSK PHY as the Management PHY to use in the control and report phases, but thereafter (once the PHY for control and reporting has been selected) to disallow changing to a different PHY during active ranging.

What this is trying to say is that for frames with the Management PHY Configuration field sent during active ranging (i.e. in control or reporting phase) the PHY must match the current PHY, i.e., it is not allowed to change to the other PHY. In other words, the O-QPSK PHY is not allowed to use the Management PHY Configuration field to select the UWB PHY, or vice versa.

This intent is not well captured in the current text, and it neglects to cover Advertising Response Compact frame or Public Start of Ranging Compact frame which may also decide/propose to switch PHYs, e.g., from the O-QPSK PHY during initialization to the HRP UWB PHY for the control and reporting phases. And, as the commenter is pointing out, the phrase “match the PHY in use in the current MMS UWB mode” is unclear in meaning.

The resolution proposed below, is (hopefully) capturing this requirement in a clearer way:

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the paragraph as shown:

When the Management PHY Configuration field is included in Compact frames ~~other than the Start of Ranging Compact frame, the PHY layer modulation selected for the control and/or the report phase shall match the PHY in use in the current MMS UWB mode~~ transmitted during the control or report phases, then when the HRP UWB PHY is being employed to send the frame, the Control Phase Config field and the Report Phase Config field shall both be set to either 14 or 15, and when the when the O‑QPSK PHY is being employed to send the frame, the Control Phase Config field and the Report Phase Config field shall both be set to values in the range 1 to 8.

1. **Comment Index # 282**

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| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 282 (Ben) | 183 | 10.41.3.1 | 9 | use of "shall not" is incorrect. A correct statement of the requirement specifies when something is done, not when it is not (there are many other cases when it is not). | A controlee shall send the Controller Association Request command in a block when the Association Availability field is set to a non-zero value. |

**Discussion:**

The commenter is saying that “shall not” is incorrect, but the proposed change needs some small tweaks: (a) Since the field referred to is a single bit, the only “non-zero” value is “one” so it would be clearer to just say “one” instead. (b) The use of “when” is ambiguous once the original negative sentence format is inverted to a positive sentence, i.e., the controlee should not send every time when this bit is one, but only if it has been told to associate via the MLME-ASSOCIATE.request primitive. The required operation can be made clearer by using “with” instead of “when”. The resolution then as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:** Change the sentence as shown:

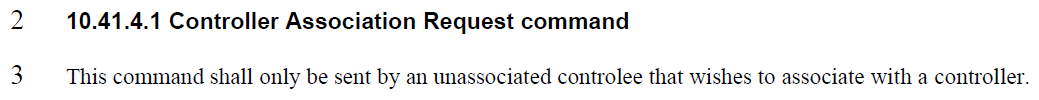
A controlee shall ~~not~~ send the Controller Association Request command in a block ~~when~~ with the Association Availability field ~~is~~ set to ~~zero~~ one.

# Comment Index # 280

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| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 280 (Ben) | 185 | 10.41.4.1 | 3 | "shall only" is poor specification practice. In this case "only" is not needed and is not correct. | Delete "only" |

**Discussion:**

This relates to the (single sentence) introductory paragraph of the clause describing the Controller Association Request command:



While the commenter is correct that we should not have the “only” in this sentence, a better introduction would state that it is the next higher layer (doing the “wishing” and) initiating the association and the transmission of the Controller Association Request command by issuing the MLME-ASSOCIATE.request primitive. A revised resolution is proposed as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:**

Change p.185 line 3 from:

~~This command shall only be sent by an unassociated controlee that wishes to associate with a controller.~~

to:

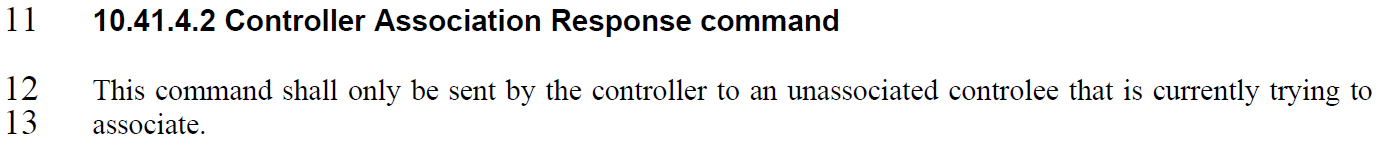
The Controller Association Request command shall be sent to initiate controller association when the higher layer issues an MLME-ASSOCIATE.request with ControllerAssociation set to TRUE.

# Comment Index # 281

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| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 281 (Ben) | 186 | 10.41.4.2 | 12 | "shall only" is poor specification practice. In this case "only" is not needed and is not correct. | Delete "only" |

**Discussion:**

This relates to the (single sentence) introductory paragraph of the clause describing the Controller Association Response command:



While the commenter is correct that we should not have the “only” in this sentence, a better introduction would state that that the transmission of the Controller Association Response command is initiated by the next higher layer issuing the MLME-ASSOCIATE.response primitive. A revised resolution is proposed as follows:

**Proposed Disposition:** Revised.

**Disposition Detail:**

Change p.185 line 3 from:

~~This command shall only be sent by the controller to an unassociated controlee that is currently trying to associate.~~

to:

The Controller Association Response command shall be sent when the higher layer issues an MLME-ASSOCIATE.response with ControllerAssociation set to TRUE.

# Comment Index # 219

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| **Index** | **page** | **Clause** | **line** | **Comment** | **Proposed Change** |
| 219 (Mickael) | 204 | 12.3.7 | 1 | The range of phyHrpUwbTxPacketConfig is incorrect | move phyHrpUwbTxPacketConfig after phyHrpUwbRxPacketConfig and change the range to "BASIC\_PACKET, STS\_PACKET\_1, STS\_PACKET\_2, STS\_PACKET\_3, SENS\_PACKET\_0, SENS\_PACKET\_1, SENS\_PACKET\_2, MMS\_PACKET\_1, MMS\_PACKET\_2" |

**Discussion:**

The commenter is correct, *phyHrpUwbStsRxPacketConfig* and *phyHrpUwbStsTxPacketConfig* were changed to *phyHrpUwbRxPacketConfig* and *phyHrpUwbTxPacketConfig* and their type was changed from integer to enumeration, but it looks like the editor omitted to change the range of *phyHrpUwbTxPacketConfig* to the enumerated values, i.e., as was done for *phyHrpUwbRxPacketConfig*. These D02 table entries are shown below for reference:

A screen shot of a computer

AI-generated content may be incorrect.

A close-up of a number

AI-generated content may be incorrect.

**Proposed Disposition:** Revised.

**Disposition Detail:** For the *phyHrpUwbTxPacketConfig* row of Table 12-8, change the range to match that of the *phyHrpUwbRxPacketConfig* row, showing the new enumerated values underlined and the original “0–3” range struck out:

|  |  |  |  |
| --- | --- | --- | --- |
| Change: | A close-up of a number  AI-generated content may be incorrect. | To: | A screen shot of a computer  AI-generated content may be incorrect. |

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