**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 Proposed comment resolutions for NB Channel Map CID 79 and 82** |
| Date Submitted | May 2024 |
| Sources | Pooria Pakrooh (Qualcomm)  |  |
| Re: |   |
| Abstract | Resolution to comments 79 and 82 |
| Purpose | To propose comments resolution 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. |

***The resolutions here are related to the resolutions in DCN 279/r0.***

***Comment Index #107 in 15-24-0010-16-04ab-cc-consolidated-comments***

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| --- | --- | --- | --- | --- | --- |
| **Name** | **Idx** | **Pg** | **L.** | **Comment** | **Proposed Change** |
| Pooria Pakrooh | 79 | 66 | 9 | For airtime efficiency, it is good to have the option for signaling the UNII-3 and UNII-5 bitmaps, separately. | Add two tables, under Figure 43, with the following contents: "Figure 44: The NB Channel Map field for UNII-3--> Contents: NB Channels 0-3 (bits 0-3) / WLAN channel bitmask (UNII-3) (bits 4-9) /NB Channel start (bits 10-12) /NB Channel step (bits 13-14)/ Reserved (bit 15)"AND "Figure 45: The NB Channel Map field for UNII-5--> Contents: NB Channels 50-57 (bits 0-7) / WLAN channel bitmask (UNII-5) (bits 8-31) /NB Channel start (bits 32-34) /NB Channel step (bits 35-36)/ reserved (bits (37-39)" |
| Pooria Pakrooh | 82 | 72 | 19 | Define message control 0x01 and message control 0x02 to signal UNII-3-only and UNII-5-only channel maps. | Change to: "The NB Channel Map field shall be set as per Figure 44 for message control 0x00, as per Figure 45 for message control 0x01, and as per Figure 46 for message control 0x02." |

**Resolution: Revised**

***Instruction (1) to the editor: In DCN 279/r0, change Figure 55 and the description under it as shown below:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Octets: 1/2** | **0/2/5/6** | **0/1** | **0/7** | **0/3** | **0/2** | 0/variable |
| Presence Bitmap | NB Channel Map | Management PHY Configuration | Management MAC Configuration | Ranging PHY Configuration | Ranging MAC Configuration | SMC\_TLVs |

**Figure 55—Format of the Message Content field in the Advertising Response Compact frame when the Message Control field value is 0x10**

**The Presence Bitmap field is set as specified in 10.38.10.3.xx. The fields “Block and round Index Present” and “Start and End Slot Indices present” shall be set to zero in the Advertising Response Compact frame when the Message Control field value is 0x10**

***Instructions (2) to the editor: add after 10.38.10.3.7 "The NB Channel Map field" as shown below:***

**10.38.10.3.8 The NB Lower Channel Map field**

The NB Low Channel Map field is used to communicate the *macMmsNbChannelAllowList* for UNII-3 between initiators and responders, by referencing the NB channel indexes as defined in 11.1.3.15. The NB Lower Channel Map field shall be formatted as shown in Figure 44.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bits: 0-3 | 4-9 | 10-12 | 13-14 | 15 |
| NB Channels 0-3 | WLAN channel bitmask (UNII-3) | NB Channel start | NB Channel step | Reserved |

Figure 44--NB Lower Channel Map

The allowed list of NB channels is defined as

*macMmsNbChannelAllowList* = NbChannelBitmaskSet ∩ NbChannelAffineSet

where NbChannelBitmaskSet is obtained from bits 0 to 9 and NbChannelAffineSet is obtained from bits 10 to 14 of the NB Channel Map field.

Bit 0 to bit 3 set to 1 include NB channel numbers 0 to 3 in NbChannelBitmaskSet, respectively, the lowest bit corresponding to NB channel 0.

If bit N, where 4 ≤ N ≤ 8, is set to 1, the NbChannelBitmaskSet includes the eight NB channels with indexes running from (N – 4) × 8 + 4 to (N – 4) × 8 + 11, corresponding to the 20 MHz UNII-3 WLAN channels 149, 153, 157, 161, 165 and NB channels 4 to 43.

If bit 9 is set to 1, NbChannelBitmaskSet includes the 6 NB channels with indexes 43 to 49 (corresponding to UNII-3 WLAN channel 169).

Bits 10 to 12 encode the value of NB\_channel\_start in the range 0 to 7.

Bits 13 to 14 encode the enumeration of NB\_channel\_step {1, 2, 4, 8}.

NbChannelAffineSet is then constructed from NB\_channel\_start and NB\_channel\_step as

NbChannelAffineSet = {y: y = x × NB\_channel\_step + NB\_channel\_start}, such that 0 ≤ y ≤ 249 and x ∈ ℕ0, where ℕ0 is the set of natural numbers, additionally including zero.

**10.38.10.3.9 The NB Higher Channel Map field**

The NB Higher Channel Map field is used to communicate the *macMmsNbChannelAllowList* for UNII-3 between initiators and responders, by referencing the NB channel indexes as defined in 11.1.3.15. The NB Higher Channel Map field shall be formatted as shown in Figure 45.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bits: 0-7 | 8-31 | 32-34 | 35-36 | 37-39 |
| NB Channels 50-57 | WLAN channel bitmask (UNII-5) | NB Channel start | NB Channel step | Reserved |

Figure 45--NB Higher Channel Map

The allowed list of NB channels is defined as

*macMmsNbChannelAllowList* = NbChannelBitmaskSet ∩ NbChannelAffineSet

where NbChannelBitmaskSet is obtained from bits 0 to 31 and NbChannelAffineSet is obtained from bits 32 to 36 of the NB Channel Map field.

If bit 0 to bit 7 are set to 1, NbChannelBitmaskSet includes NB channels 50 to 57, respectively, the lowest bit corresponding to NB channel 50.

If bit N, where 8 ≤ N ≤ 31, is set to 1, NbChannelBitmaskSet includes the eight NB channels with indexes

running from (N –8) × 8 + 58 to (N –8) × 8 + 65, corresponding to the 20 MHz UNII-5 WLAN channels 1 to 93 and NB channels 58 to 249.

Bits 32 to 34 encode the value of NB\_channel\_start in the range 0 to 7.

Bits 35 to 36 encode the enumeration of NB\_channel\_step {1, 2, 4, 8}.

NbChannelAffineSet is then constructed from NB\_channel\_start and NB\_channel\_step as

NbChannelAffineSet = {y: y = x × NB\_channel\_step + NB\_channel\_start}, such that 0 ≤ y ≤ 249 and x ∈ ℕ0, where ℕ0 is the set of natural numbers, additionally including zero.

Additional instructions to the editor:

Instruction (3): Figures 63, 67, 72, 84, 87: Change “NB Channel Map” field size to 0/2/5/6.

Instruction (4): Remove “Figure 64” and “page 76 lines 8-23”, and “page 77 lines 1-3”. Instead, refer to “Figure xx1-Presence Bitmap format” in DCN 279/r0. Add the following description: “**The Presence Bitmap field is defined in 10.38.10.3.xx. The field “Extended Presence Bitmap Present” shall be set to zero in the One-to-one Poll Compact frame when the Message Control field value is 0x10**”

Instruction (5): Remove “page 78, lines 3-5”, and replace them with the following text: **“The Presence Bitmap field is defined in 10.38.10.3.xx. The fields “Block and Round Index Present” and “Extended Presence Bitmap Present” shall be set to zero in RESP Compact frame when the Message Control field value is 0x10”**

Instruction (6): Remove “page 79, lines 19-21”, and replace them with the following text: **“The Presence Bitmap field is defined in 10.38.10.3.xx. The fields “Block and Round Index Present” and “Extended Presence Bitmap Present” shall be set to zero in One-to-one Responder Report Compact frame when the Message Control field value is 0x10.”**

Instruction (7): Remove "Figure 83” and “page 83 lines 13-26” and “page 84 lines 1-3”. Instead, refer to “Figure xx1-Presence Bitmap format”, and the associated description in DCN 279/r0. Add the following description: “**The Presence Bitmap field is defined in 10.38.10.3.xx. The field “Extended Presence Bitmap Present” shall be set to zero in the One-to-many Poll Compact frame when the Message Control field value is 0x70”**

Instruction (8): Remove “Figure 86”, and “page 84 line 22”, and “page 85 lines 2-21”. Instead, refer to “Figure xx1-Presence Bitmap format”, and the associated description in DCN 279/r0. Add the following description: “**The Presence Bitmap field is defined in 10.38.10.3.xx. The field “SMC\_TLVsPresent” in Figure xx2 shall be set to zero in the One-to-many Poll Compact frame** **when the Message Control field value is 0x80.”**

Instruction (9): Remove “Figure 93” and “page 88 lines 2-12”. Instead, refer to “Figure xx1-Presence Bitmap format” in DCN 279/r0. Add the following description: “**The Presence Bitmap field is defined in 10.38.10.3.xx. The fields “Block and Round Index Present”, and “Extended Presence Bitmap Present” in Figure xx2 shall be set to zero in the One-to-many Poll Compact frame when the Message Control field value is 0x80.**”