**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 Comments Resolution for 15.4ab D1.0 NB Channel Map Comments: Part 2** | |
| Date Submitted | February 2025 | |
| Sources | Pooria Pakrooh (Qualcomm), Alex Krebs (Apple) |  |
| Abstract | Resolution to comments: 116, 127, 128, 240, 499, 655, 528, 529, 1361 | |
| Purpose | To propose comments resolution for “P802.15.4ab™/D (pre-ballot) C Draft Standard for Low-Rate Wireless Networks” | |
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***Comment Indices #116, 127 and 128 in 15-24-0371-13-04ab-consolidated-comments\_draft\_1.0***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 116 | Rojan Chitrakar | 10.38.9.5 | 94 | 1 | NB channel Map field is 6 octets long, either the field here should be renamed to a different name or the 6-octet bitmap should be called something else (e.g., Full NB Channel Map). | As in comment |
| 127 | Rojan Chitrakar | 10.38.9.7 | 98 | 1 | NB channel Map field is 6 octets long, either the field here should be renamed to a different name or the 6-octet bitmap should be called something else (e.g., Full NB Channel Map). | As in comment |
| 128 | Rojan Chitrakar | 10.38.9.7 | 98 | 6 | Only the 6 octet version the NB channel Map field (10.38.9.3.7) is referenced. | Add the other versions of the NB channel Map field. |

**Discussion:** Agree with the comment. All three versions need to be referenced. Also, I agree that a better term is needed to distinguish “NB Channel Map” from “NB Lower Channel Map” and “NB Higher Channel Map”.

**Resolution: Revised**

**Notes to the Editor:**

1. Change page 98 line 6 as follows:

“The NB Channel Map field if present shall be set as per 10.38.9.3.7 to represent the 6-byte NB Full Channel Map, or it shall be set as per 10.38.9.3.8 to represent 2-byte of NB Lower Channel Map, or as per 10.38.9.3.9 to represent the 5-byte NB Higher Channel Map “

1. Page 81, line 14. change “NB Channel Map” to “NB Full Channel Map”.
2. Page 82 line 26, change “NB Channel Map” to “NB Lower Channel Map”
3. Page 83, line 16, change “NB Channel Map” to “NB Higher Channel Map”

***Comment Index #1361 in 15-24-0371-13-04ab-consolidated-comments\_draft\_1.0***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 1361 | Pooria Pakrooh | 10.38.9.3.13 | 87 | 11 | The requested channel map could be Lower/Upper or both. | Dedicate 2 bits for "NB Channel Map requested" and explain the mapping. |

**Discussion:** All three versions of channel map need to be reflected in the request bitmap field.

**Resolution: Revised**

**Notes to the Editor:**

1. Change Figure 55 as below

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| Bits: 0-1 | 2 | 3 | 4 | 5 | 6-7 |
| NB Channel Map requested | Management PHY Config requested | Management MAC Config requested | Ranging PHY Config requested | Ranging MAC Config requested | reserved |

1. Change page 87, lines 12-13 as below:

“The NB Channel Map requested field when set to 0 indicates that NB channel map is not requested, when set to 1 indicates that the NB Full Channel Map field is requested, when set to 2 indicates that the NB Lower Channel Map is requested, and when set to 3 indicates NB Higher Channel Map is requested to be included in the response Compact frame.”

***Comment Indices #528 and #529 in 15-24-0371-13-04ab-consolidated-comments\_draft\_1.0***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 528 | Tero Kivinen | 10.38.9.3.24 | 90 | 7 | Make a new table that maps the NB Channel Map Present field to type of the NB Channel Map and use it. | Add new table that maps 0 = none, 1 = NB lower Channel Map, 2 = NB Higher Channel Map and 3 = NB Channel Map with references to suitable section. |
| 529 | Tero Kivinen | 10.38.9.3.24 | 90 | 3 | The NB Channel Map Present is bad name, as it does not only indicate whether NB Channel Map is present, it also indicates the type of it. | Change NB Channel Map Present field to NB Channel Map Type field. |

**Discussion:** The proposal in CID 528 is addressed by the descriptions in lines 6-10. If the TG/WG editors feel a table is a better representation, that is fine too. Additionally, lines 4-5 of page 90 are redundant and should be removed.

For CID 529, this field indicates whether one of the three types of channel map is present. When set to 0 it shows the absence of NB channel maps in its different variations. This is a subfield of the “Presence bitmap” field, so naming them “NB Channel Map Present” seems to be more descriptive.

**Resolution:**

**CID 528: Revised**

**CID 529: Rejected**

**Notes to the Editor:**

1. Remove lines 4-5 of page 90.

***Comment Indices #528 and #529 in 15-24-0371-13-04ab-consolidated-comments\_draft\_1.0***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 499 | Tero Kivinen | 10.38.9.3.8 | 82 | 27 | This repeats same procedure which was already described in the 10.38.9.3.7. If the pieces of the NB Channel Map would be split in different parts ((macMmsNbChannelsLow, macMmsNbChannelsUnii3, macMmsNbChanneslHigh, macMmsNbChannelsUnii5) then the mapping from those mac variables to list of channels could be defined once, and NB Channel Map field, NB Lower Channel Map and NB Higher Channel Map structures could be defined by just concatenation of those mac fields. The constructions of the allow list from those separate mac PIB entries could be done once in 10.38.7.4.2. | Split macMmsNbChannelMap to separate PIB entries, describe construction of allow list once, and define these NB {,Lower,Higher} Channel Map structures to be just concatenation of those pib entries. |
| 655 | Tero Kivinen | 10.38.10.1 | 124 | 16 | Why is the macMmsNbChannelMap describes in this kind of encoded format. It would be much easier if the PIB entries would actually have the separate fields (macMmsNbChannelsLow, macMmsNbChannelsUnii3, macMmsNbChanneslHigh, macMmsNbChannelsUnii5) and the macMmsNbChannelMap would be constructed from them when needed. | As specified in comment |

**Discussion:**

1. I agree with the commenter that it is better to have two separate channel maps for UNII-3 and UNII-5 bands. Then, depending on what bands are used (UNII-3, UNII-5 or both), the appropriate channel map can be transmitted OTA, and the allowed channel list PIB can be configured. This was the intention when defining separate messages for UNII-3 and UNII-5. However, there was interest from other 4ab member(s) to keep the Full NB channel map already defined, prior to pre-ballot draft C. Therefore, with the existing definitions, there is overlap between lower and upper channel maps, and the Full channel map cannot be simply constructed from a union of them.
2. Also, agree with the commenter that there is some repetition in the texts defining channel map fields. The suggested changes below address this by removing some of the repetitions.
3. Regarding the PIBs, *macMmsNbChannelAllowList can be constructed from the Full/lower/Higher narrowband channel map. A sentence is added to clarify this.*

**Resolution: Revised**

**Notes to the Editor:**

1. Edit page 82, line 23-31 and page 83 lines 1-7 as below:

The allowed list of NB channels is defined as

*macMmsNbChannelAllowList* = NbChannelBitmaskSet ∩ NbChannelAffineSet

where NbChannelBitmaskSet is obtained from bits 0 to 9 of the NB Lower Channel Map field, as defined in 10.38.9.3.7. Bits 10 to 12 encode the value of NB channel start. Bits 13 to 14 encode the enumeration of NB Channel step from the set {1, 2, 4, 8}. NbChannelAffineSet is obtained as specified below:

NbChannelAffineSet = {y: y = x × NB channel step + NB channel start}, such that 0 ≤ y ≤ 49 and x ∈ℕ0, where ℕ0 is the set of natural numbers, additionally including zero.

1. Edit page 83, line 13-26 as below:

The allowed list of NB channels is defined as

*macMmsNbChannelAllowList* = NbChannelBitmaskSet ∩ NbChannelAffineSet

where NbChannelBitmaskSet is obtained from bits 0 to 31 as

Bits 0 to 7 when set to 1 include NB channel numbers 50 to 57 respectively in the NbChannelBitmaskSet, the lowest bit corresponding to NB channel 50.

If bit N, where 8 ≤ N ≤ 31, is set to 1, the 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+50}, such that 50 ≤ y ≤ 249 and x ∈ℕ0, where ℕ0 is the set of natural numbers, additionally including zero.

1. Table 20, line 2, modify the description as below:

“List of channels enabled for channel switching. This attribute can be constructed from NB Full Channel Map, NB Lower Channel Map, or NB Higher Channel Map.”

1. Remove Table 20, first row, as it is not a MAC PIB.

***Comment Index #240 in 15-24-0371-13-04ab-consolidated-comments\_draft\_1.0***

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| **CID** | **Commenter** | **Sub-Clause** | **Page** | **Line** | **Comment** | **Proposed Change** |
| 240 | Li-Hsiang Sun | 10.38.9.3.9 | 83 | 25 | y = x × NB\_channel\_step + NB\_channel\_start, but the NB\_channel\_start=0~7 | change to "y = x × NB\_channel\_step + NB\_channel\_start +50" |

**Discussion:** NB higher channel map field should point to channels in UNII-5. This is addressed in the edits proposed for CIDs 499 and 655.

**Resolution: Accepted**