IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB 203 Comment Resolution for 8.4.2.170k and 8.4.2.170x | | | | |
| Date: 2014-08-25 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |

Abstract

This submission proposes resolutions for comments in subclause 8.4.2.170k and 8.4.2.170x of TGah Draft 2.0 with the following CIDs (TOT 9 CIDs):

* 3267, 3268, 3648, 3728, 3736, 4109
* 3737, 4061, 4108

Revisions:

* Rev 0: Initial version of the document
* Rev 1: Added a declarative statement in 9.7.5.7 as part of the resolution for CID 4109 because the normative statement can already be found in D2.0 (changes highlighted in green).

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGah Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGah Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGah Editor: Editing instructions preceded by “TGah Editor” are instructions to the TGah editor to modify existing material in the TGah draft. As a result of adopting the changes, the TGah editor will execute the instructions rather than copy them to the TGah Draft.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3267 | Alfred Asterjadhi | 152.58 | 8.4.2.170k | The Sounding Start Time is 16 bits in the figure. Replace "19" with "16". | As in comment. | Revised –  Agree with commenter (actually the inconsistency is in P153L58). Resolution accounts for suggested change.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 3267. |
| 3268 | Alfred Asterjadhi | 152.61 | 8.4.2.170k | The Maximum permitted PPDU BW is 1 MHz if the SST channel unit of the SST operation element is 1 MHz. Change "2" to "minimum width channel." | As in comment. | Revised –  Agree in principle with comment. Resolution accounts for suggested change by clarifying the channel width unit in all cases.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 3268. |
| 3648 | kaiying Lv | 151.44 | 8.4.2.170k | When Sounding Option subfield is set to 1, Channel Activity Schedule subfield can be of 2 octets. Therefore Nx4 is not correct. | Please change the Channel Activity Schedule subfield length to "Nx2 or Nx4" octets in the Figure 8-401aj. | Revised –  Agree with commenter. Resolution accounts for suggested change.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 3648. |
| 3728 | Liwen Chu | 152.34 | 8.4.2.170k | The meaning of value "1" and "0" of this field is missing. | Add the missing text. This similar changes should be done in L40 P152 also. | Revised –  Agree with commenter. Resolution accounts for suggested change.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 3728. |
| 3736 | Liwen Chu | 152.27 | 8.4.2.170k | "Only one bit in the bitmap can be set to 1 within each channel activity schedule."  If only bit can be 1, it is not necessary to use bitmap, 3-bit subfield is enough | As proposed in comment. | Rejected –  The comment fails to identify a technical issue and is asking a question.  As a response to the comment: To keep consistency between the SST Operation element (that contains the SST Enabled Channel Bitmap) and SST element (Channel Activity Bitmap) signaling the bitmap is preferred. |
| 4109 | Shusaku Shimada | 152.48 | 8.4.2.170k | Add the text in term of regulatory limit of maximum transmission width in order to permit utilizing SST globally. | Insert "The maximum operating channel width shall be limitted even if Maximum Transmission Width field, e.g. 2MHz, indicates wider than Channel Width, e.g. 1MHz, specified in S1G Operation Information fields, in order to abide by the rules of each regulatory domain." after "and cannot exceed the BSS operating channel width specified by the AP in a transmitted S1G Opertion element.". | Revised –  Agree in principle with the comment. Resolution accounts for suggested change noting that normative text cannot be added to Subclause 8 and also the sentence has been changed for better readability.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 4109. |

**Discussion:** *None.*

8.4.2.170l **Subchannel Selective Transmission (SST) element**

The Subchannel Selective Transmission (SST) element is shown in Figure 8-575a28 (Subchannel Selective Transmission element format).

**TGah Editor: *Change the figure below as follows (#3648):***

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | Element ID | Length | Channel Activity Schedule |
| Octets: | 1 | 1 | Nx2 or N×4 |
| Figure 8-575a28—**Subchannel Selective Transmission element format** | | | |

The Element ID and Length fields are defined in 8.4.2.1 (General).

N is the number of channel activity schedules being provided.

The format of the Channel Activity Schedule subfield is shown in Figure 8-575a29 (Channel Activity Schedule subfield format (Sounding Option = 0)(#3930)) and Figure 8-575a30 (Channel Activity Schedule subfield format (Sounding Option = 1)(#3930)).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1        B8 | B9 | B10 | B11        B12 | B13              B31 |
|  | Sounding Option (=0) | Channel Activity  Bitmap | UL  Activity | DL  Activity | Maximum  Transmission  Width | Activity Start Time |
| Bits: | 1 | 8 | 1 | 1 | 2 | 19 |
| Figure 8-575a29—**Channel Activity Schedule subfield format (Sounding Option = 0)**(#3930) | | | | | | |

The Sounding Option subfield is set to 0 to indicate that the Channel Activity Schedule field is the AP Activity schedule.

The Channel Activity Bitmap subfield contains a bitmap indicating on which channels there is expected or permitted to be transmission activity at a given time. Each bit in the bitmap corresponds to one minimum width channel for the band of operation with the LSB corresponding to the lowest numbered operating channel of the BSS. A value of 1 in a bit position in the bitmap means that the AP expects activity and/or permits transmissions with bandwidth less than or equal to Maximum Transmission Width and that include that channel, after the time indicated in the Activity Start Time subfield. Only one bit in the bitmap can be set to 1 within each channel activity schedule. The minimum width channel is equal to the SST Channel Unit field of the SST Operation element if such an element has been previously transmitted or is equal to 2 MHz if no such element has been previously received from the AP to which the SST STA is associated.

NOTE - transmissions need to comply with the channelization for the regulatory domain of operation.

**TGah Editor: *Change the paragraphs below as follows (#3728):***

The UL Activity bit is set to 1 to indicate that STAs associated with the SST AP that transmits the SST element are permitted to transmit frames that are not immediate response frames on the channel(s) identified by the Channel Activity Bitmap and Maximum Transmission Width at the time indicated in the Activity Start Time subfield. Otherwise it is set to 0.

The DL Activity bit is set to 1 to indicate that the AP that transmits the SST element intends to transmit frames that are not immediate response frames on the channel(s) identified by the Channel Activity Bitmap and Maximum Transmission Width at the time indicated in the Activity Start Time subfield. Otherwise it is set to 0.

**TGah Editor: *Change the paragraph and table below as follows (#4109, 3268):***

The Maximum Transmission Width field indicates the maximum permitted PPDU bandwidth for a transmission on the indicated channel and cannot exceed the BSS operating channel width specified by the AP in a transmitted S1G Operation element. In order to abide by the rules of each regulatory domain, the maximum operating channel width is limited by the BSS operating channel width even if the Maximum Transmission Width field specifies otherwise.The maximum permitted PPDU bandwidth is in MHz and is determined based on the Maximum Transmission Width subfield as shown in Table 8-258a7 (Mapping between Maximum Transmission Width field and maximum permitted PPDU bandwidth).

|  |  |
| --- | --- |
| Table 8-258a7—**Mapping between Maximum Transmission Width field and maximum permitted PPDU bandwidth** | |
| **Maximum Transmission Width (Bit 1 Bit 0)** | **Maximum permitted PPDU bandwidth (MHz)** |
| 0 0 | channel width unit |
| 0 1 | 4 |
| 1 0 | 8 |
| 1 1 | 16 |
| NOTE – The channel width unit is equal to 1 MHz if the SST Channel Unit field of the most recently received SST Operation element from the SST AP is equal to 1. If no SST Operation element has been received or the SST Channel Unit field of the received SST Operation element is equal to 0 then the channel width unit is equal to 2 MHz. | |

The Activity Start Time subfield contains a value that defines a start time for when the AP expects frame transmissions to begin on the channel(s) indicated in the corresponding Channel Activity Bitmap. The start time is triggered when the 19 least significant bits of the TSF timer for the BSS match the value that is indicated in the Activity Start Time subfield of the SST element. The count down to the start time is initiated at the end of the transmission of the frame containing the SST element.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1        B8 | B9 | B10    B13 | B14        B15 | B16              B31 |
|  | Sounding Option (=1) | Channel Activity  Bitmap | Sounding Start Time Present | Reserved | Maximum  Transmission  Width | Sounding Start Time (optional) |
| Bits: | 1 | 8 | 1 | 4 | 2 | 0 or 16 |
| **Figure 8-575a30—Channel Activity Schedule subfield format (Sounding Option = 1)**(#3930) | | | | | | |

The Sounding Option subfield is set to 1 in order to indicate that the Channel Activity(#3266) Schedule field is the SST sounding schedule.

The Channel Activity Bitmap subfield contains a bitmap indicating on which channels there is an SST sounding transmission activity at a given time. Each bit in the bitmap corresponds to one minimum width channel for the band of operation with the LSB corresponding to the lowest numbered operating channel of the BSS. A value of 1 in a bit position in the bitmap means that the AP transmits one more PIFS-separated sounding NDP frames.

The Sounding Start Time Present subfield indicates whether the Sounding Start Time subfield is present in the Channel Activity Schedule field. If the subfield is equal to 1, the Sounding Start Time subfield is present. If this subfield is equal to 0, the Sounding Start Time subfield is not present.

**TGah Editor: *Change the figure below as follows (#3267):***

The Maximum Transmission Width subfield indicates the channel bandwidth of the sounding NDP and is shown in Table 8-258a7 (Mapping between Maximum Transmission Width field and maximum permitted PPDU bandwidth).

The Sounding Start Time subfield contains a value that defines a start time when the AP transmits one or more sounding NDP frames on the channel(s) indicated in the corresponding Channel Activity Bitmap. If the Sounding Start Time subfield is not present, the AP transmits one or more PIFS-separated sounding NDP frames starting after the transmission of the Beacon frame containing the SST element. If the Sounding Start Time subfield is present, the AP transmits one or more PIFS-separated sounding NDP frames starting at the time indicated in the Sounding Start Time field. The start time is triggered when the 16 least significant bits of the TSF timer for the BSS match the value that is indicated in the Sounding Start Time subfield of the SST element. The count down to the start time is initiated(#Ed) at the end of the transmission of the frame containing the SST element

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 3737 | Liwen Chu | 172.60 | 8.4.2.170x | "PCO is the value of the Primary Channel Offset field"  This sentence is problematic | Change to "PCO is the offset value value of the BSS Primary Channel relative to the lowest numbered subchannel of SST Enabled Channel Bitmap. | Revised –  Agree with commenter. Resolution accounts for suggested change.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 3737. |
| 4061 | Ronald Murias | 172.36 | 8.4.2.170x | I object to the resolution of CID 1530. There are reserved bits in the SST operation element, why not just signal the primary channel? | Remove the bitmap calculation and directly signal the channel number. | Rejected –  The comment fails to identify a technical issue and is asking a question.  As a response to the comment. The primary channel is already signalled via the S1G Operation element in its Primary Channel Number field so there is no need to signal the same quantity in this element. |
| 4108 | Shusaku Shimada | 172.60 | 8.4.2.170x | The term "PCO" is confusing with Phased Coexistence Operation. | Substitute "PCO" with "OPC (Offset of Primary channel)". | Revised –  Agree with commenter. Resolution accounts for suggested change.  TGah editor to make the changes shown in 11-14/1079r1 under all headings that contain CID 4108. |

**8.4.2.170y SST Operation element**

The Subchannel Selective Transmission (SST) Operation element is shown in Figure 8-575a54 (SST Operation element format)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0               B7 | B8             B15 | B16            B23 | B24            B26 | B27 | B28            B31 |
|  | Element ID | Length | SST Enabled Channel Bitmap | Primary Channel Offset | SST Channel Unit | Reserved |
| Bits: | 8 | 8 | 8 | 3 | 1 | 4 |
| Figure 8-575a54—**SST Operation element format** | | | | | | |

The Element ID and Length fields are defined in 8.4.2.1 (General).

**TGah Editor: *Change the paragraph and table below as follows (#4108, 3737):***

The SST Enabled Channel Bitmap field is 8 bits and contains a bitmap indicating which channels are enabled for SST operation. Each bit in the bitmap corresponds to one channel of width equal to the value of SST Channel Unit field, with the least significant bit corresponding to the lowest numbered subchannel in the SST Enabled Channel Bitmap. The channel number of each of the channels in the SST Enabled Channel Bitmap is equal to PCN minus OPC plus POS, where PCN is the value of the Primary Channel Number subfield in the most recently transmitted S1G Operation element, OPC is the offset of the primary channel relative to the lowest numbered subchannel in the bitmap as specified by the value of the Primary Channel Offset field and POS is the position of the channel in the bitmap. A value of 1 in a bit position in the bitmap indicates that the subchannel is enabled for SST operation but transmissions from SST STAs in that subchannel are allowed subject to the rules defined in 9.42f (Subchannel Selective Transmission (SST)). More than one bit in the bitmap can be set to 1.

NOTE - Transmissions need to comply with the channelization for the regulatory domain of operation.

The Primary Channel Offset field is 3 bits and indicates the relative position of the primary channel with respect to the lowest numbered channel in the SST Enabled Channel Bitmap field. For example, a value of the Primary Channel Offset equal to 2 indicates that the primary channel is the third subchannel in the SST Enabled Channel Bitmap.

The SST Channel Unit field is 1 bit and indicates the channel width unit of each SST channel. A value of 1 indicates that the channel width unit is 1 MHz and a value of 0 indicates that the channel width unit is 2 MHz.

The Reserved field is 4 bits.

**TGah Editor: *Please insert the following paragraph in P242L21 of IEEE802.11ah D2.1 (#4109):***

Additionally, the value of the CH\_BANDWIDTH parameter for a transmission by an S1G STA that is operating as an SST STA is limited by the Maximum permitted PPDU bandwidth as indicated in the Maximum Transmission Width field of the most recently received SST element or RPS element (see 9.42f (Subchannel Selective Transmission (SST)) and 9.22.5 (Restricted Access Window (RAW) Operation).