IEEE P802.11
Wireless LANs

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| LB200 Proposed Resolutions for Subclause 9.17b |
| Date: 2013-12-27 |
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|  |  |  |  |  |

Abstract

Addressing all CIDs from LB200 which relate to Subclause 9.17b including resolutions for:

* CIDs: 1202, 1203, 1204, 1629, 1647, 1648, 1649, 1727, 2127, 2222, 2600, 2601, 2747, 2748, 2782, 2903, 2904

**REVISION NOTES:**

R0: initial

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 “Instruction to 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 LIST:**

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| --- | --- | --- | --- | --- | --- | --- |
| 1202 | Adrian Stephens | 165 | 9.17b | The concept of "color" is not described. This is as good a place as any to do it. | Please add a 1-para description of the purpose of Color.Also change the case of the word in the heading to "color" if the intro is added or "COLOR" if no intro is added (as this is the capitalization of the vector parameter). | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1202 |
| 1203 | Adrian Stephens | 165 | 9.17b | "sent to an IBSS STA" -- this term doesn't exist. IBSS is not a property of a STA, but membership of IBSS is. | Express the condition based on the sender's membership of an IBSS (which is known) rather thant the intended recipient's, which is not known. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1203 |
| 1204 | Adrian Stephens | 167 | 9.17b | "Overlapping BSSID" -- this term has not been defined. | Define it. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1204 |
| 1629 | Christopher Hansen | 166 | 9.17b | The use of the dec function (i.e. cast to decimal) in Tables 9-19b and 9-19c is confusing. The objective is to map one bit field (BSSID) or a combination of BSSID and AID into another bit field (PARTIAL\_AID), correct? Can we come up with something that is bits to bits? | Replace with a clearer bit to bit mapping. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1629 |
| 1647 | David Halasz | 166 | 9.17b | Equation 9-8b is easy to mis-interpret. | Add an extra parenthesis. For instance, (dec(AID[0:8])+(dec(BSSID[44:47] XOR BSSID[40:43])╬2^5))mod 2^9 | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1647 |
| 1648 | David Halasz | 166 | 9.17b | Equation 9-8c is easy to mis-interpret. | Add an extra parenthesis. For instance, (dec(AID[0:8])+(dec(BSSID[44:47] XOR BSSID[40:43])╬2^5))mod 2^6 | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1648 |
| 1649 | David Halasz | 167 | 9.17b | In the example given, it is unclear if the example is for 1 MHz operation. | On page 167, line 15, add "for 1 MHz PPDUs and non-NDP frames" after "229". | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1649 |
| 1727 | David Hunter | 165 | 9.17b | Per the IEEE Style Manual, lead-ins to lists are followed with a colon. Also, if one item in a list is sentence, then each items in the list is followed with a period., but if no items in the list are sentences, then no item is followed with any punctuation. | Replace "MPDUs" with "MPDUs:" and on line 57 replace "frames)" with "frames):". Remove the punctuation at the end of each item on lines 49, 50 and 52. On line 59 replace "transmitted" with "transmitted." | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID1727 |
| 2127 | kaiying Lv | 166 | 9.17b | PARTIAL\_AID is not contained in 1MHz PPDU's TXVECTOR parameters | remove "1MHz PPDUs and" from the title of Table 9-19b and modify the text where Table 9-19b is referred. | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2127 |
| 2165 | Kenichi Mori | 165.35 | 9.17b | As the calculation result, different STAs may have the same PARTIAL\_AID but we cannot provide the same PARTIAL\_AID to different STAs all the time. Hence it seems to be strange to include a case, more than one individually addressed MPDUs, to use Table 9-19b or Table 9-19c. | Remove "one or more" from line 35. | Reject - the commenter seems to have missed the fact that the PPDU is an SU PPDU, and therefore, has only one STA as the intended recipient and therefore, has only one value of partial AID. This means that “more” as used here refers to MPDUs, not PPDUs. I.e. the case being described by “one” is a single SU PPDU carrying a single MPDU to a single recipient and the case being described by “or more” refers to a single SU PPDU carrying more than one MPDU to a single recipient. An example of the second case is an AMPDU. |
| 2222 | Lei Wang | 165.23 | 9.17b | The Table 9-19c should be referenced in the sentence in line 23 page 165 and the the sentence in line 35 page 165. | add the references to Table 9-19c in the following two sentences:1) line 23 page 165;2) line 35 page 165. | Accept |
| 2600 | Mu Zhao | 165.00 | 9.17b | Since Multicast ID is a type of AID, partial Multicast ID should be used as partial AID. | Change the sentence to "A STA transmitting a S1G PPDU carrying one or more group addressed MPDUs or transmitting a S1G NDP intended for multiple recipients shall set the TXVECTOR parameters PARTIAL\_AID to 0 or corresponding partial Multicast ID if the group of receipient STAs has been assigned Multicast ID. The computing rule of partial Multicast ID is same as partial AID." | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2600 |
| 2601 | Mu Zhao | 166.00 | 9.17b | Clarify that the computing rule of partial Multicast ID is same as partial AID | Change the text in the cell to "Sent by an AP and addressed to a STA or a group of STAs with an Multicast ID associated with that AP or sent by a DLS or TDLS STA in a direct path to a DLS or TDLS peer STA" | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2601 |
| 2747 | SHOUKANG ZHENG | 167.11 | 9.17b | The example is not right for 2MHz S1G PPDU (non-NDP frame). | Please clarify | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2747 |
| 2748 | SHOUKANG ZHENG | 167.25 | 9.17b | UPLINK is not present for NDP frame as well | Change to "The TXVECTOR parameter UPLINK is not present for 1 MHz frames and NDP frames" | Revise - generally agree with commenter, TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2748 |
| 2782 | SHOUKANG ZHENG | 165.21 | 9.17b | PAID is defined as partial Association Identifier and Partial AID is defined in 9.17b. They should have the same definition | Add the text "PAID is partial AID". | Revise - the term PAID refers to the field and Partial AID refers to the value in the field. TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2782 |
| 2903 | Young Hoon Kwon | 167.37 | 9.17b | By mentioning "shall maintain that value for the duration of the existence of the BSS", it doesn't allow modifying the COLOR parameter. However, in case surrounding AP configuraiton is changed, it is still beneficial to allow modifying the COLOR parameter. | As mentioned in the Comment. | Reject - it is expected that the newer BSS will choose a non-conflicting color when possible and therefore, changing color should not be an issue for an established BSS. If a BSS really needs to change color it still can do so by restarting. |
| 2904 | Young Hoon Kwon | 167.21 | 9.17b | How to set the TXVECTOR parameter UPLINK in case of broadcast/multicast is not clear. It needs further clarification. | As mentioned in the Comment. | Revise - the description for the setting of the UPLINK parameter to 1 is sufficient - for any case that does not match that condition, the UPLINK parameter will take the value 0. TGah editor to execute proposed changes from 11-14-xxxxry found under all headings which include CID2904 |

**Discussion**

**Proposed changes**

**CID 1202, 1203, 1204, 1629, 1647, 1648, 1649, 1727, 2127, 2222, 2600, 2601, 2747, 2748, 2782, 2904**

***TGah editor: remove the abbreviation “PAID” from subclause 3.3 Abbreviations and acronyms***

3.3 Abbreviations and acronyms

8.3.5.1.8 NDP Paging

***TGah editor: in subclause 8.3.5.1.8 NDP Paging, change the entry for the description of the APDI/PAID field in*** Table 8-38o—NDP MAC frame body of NDP Paging (1 MHz) ***by changing the one instance of “PAID” to “partial AID” - note, this is not an instruction to change the name of the field, but the use of the term PAID within the description of the field. Make the same change in* Table 8-38p—NDP MAC frame body of NDP Paging (≥2 MHz).**

***TGah editor: modify subclause 9.17b Group ID, partial AID, Uplink indication and Color in S1G PPDUs as shown:***

**9.19a Group ID, partial AID, Uplink indication and COLOR in S1G PPDUs**

The S1G partial AID is a non-unique identifier of an S1G STA as defined in Table 9-9a (Settings for the TXVECTOR parameter PARTIAL\_AID for NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1MHz PPDUs and non-NDP frames). The partial AID is carried in the TXVECTOR parameter PARTIAL\_AID of an S1G SU PPDU with the TXVECTOR parameter CH\_BANDWIDTH set to a value greater than 1 MHz and is limited to 9 bits.

A STA transmitting an S1G PPDU carrying one or more group addressed MPDUs that share a single, common Multicast AID value shall set the TXVECTOR parameter PARTIAL\_AID according to Table 9-9a (Settings for the TXVECTOR parameters PARTIAL\_AID for NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1MHz PPDUs and non-NDP frames). A STA transmitting an S1G PPDU carrying one or more group addressed MPDUs that do not share a single, common Multicast AID value or that is transmitting an S1G NDP intended for multiple recipients shall set the TXVECTOR parameters PARTIAL\_AID to 0. The intended recipient of an S1G NDP is defined in 9.31.7 (Transmission of an S1G NDP).

A STA transmitting an S1G SU PPDU carrying one or more individually addressed MPDUs or an S1G NDP intended for a single recipient shall set the TXVECTOR parameter PARTIAL\_AID as shown in Table 9-9a (Settings for the TXVECTOR parameters PARTIAL\_AID for 1 MHz PPDUs and NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1MHz PPDUs and non-NDP frames).

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| **Table 9-9a - Settings for the TXVECTOR parameter PARTIAL\_AID for NDP frames** |
| Condition | PARTIAL\_AID |
| A frame that is addressed to an AP  | (*dec*(BSSID[39:47])*mod*(29-1))+1 |
| A frame that is sent by an AP and addressed to a STA associated with that AP or sent by a DLS or TDLS STA in a direct path to a DLS or TDLS peer STA or to a group of STAs with a common Multicast AID and a common BSSID | (*dec*(AID[0:8])+ 25×*dec*(BSSID[44:47]  BSSID[40:43]) )*mod* 29 (9-8b)where is a bitwise exclusive OR operation*mod* X indicates the X-modulo operation*dec*(A[*b*:*c*]) is the cast to decimal operator where the digit *b* has weight 20 and the digit *c* has weight 2*c-b* |
| Otherwise | 0 |

NOTE - In Table 9-9a (Settings for the TXVECTOR parameter PARTIAL\_AID for NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1MHz PPDUs and non-NDP frames) the last row includes the cases of a PPDU carrying MPDUs:

—sent by a STA that is a member of an IBSS to a STA or STAs that are members of an IBSS

—sent by an AP to a non associated STA

—any other condition not explicitly listed elsewhere in the table

In Table 9-9a (Settings for the TXVECTOR parameter PARTIAL\_AID for NDP frames) and Table 9-9b (Settings for the TXVECTOR parameter PARTIAL\_AID for non-1MHz PPDUs and non-NDP frames):

* AID[b:c] represents bits b to c inclusive of the AID of the recipient STA for an individually-addressed frame with bit 0 being the first transmitted, and represents bits b to c inclusive of the Multicast AID of the receipient STAs for a group-addressed frame with bit 0 being the first transmitted.
* BSSID[b:c] represents bits b to c inclusive of the BSSID, with bit 0 being the Individual/Group bit. In this representation, the Individual/Group bit is BSSID[0] and BSSID[47] is the last transmitted bit.

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| **Table 9-9b - Settings for the TXVECTOR parameter PARTIAL\_AID for non-1 MHz PPDUs and non-NDP frames** |
| Condition | PARTIAL\_AID |
| A frame that is not a Control frame that is addressed to an AP | (*dec*(BSSID[39:47])*mod*(29-1))+1 |
| A frame that is not a Control frame that is sent by an AP and addressed to a STA associated with that AP or is sent by a DLS or TDLS STA in a direct path to a DLS or TDLS peer STA or is sent to a group of STAs with a common Multicast AID and a common BSSID | (*dec*(AID[0:8])+ 25×*dec*(BSSID[44:47]  BSSID[40:43]))*mod* 26 (9-8c)where is a bitwise exclusive OR operation*mod* X indicates the X-modulo operation*dec*(A[*b*:*c*]) is the cast to decimal operator where the digit *b* has weight 20 and the digit *c* has weight 2*c-b* |
| Otherwise | 0 |

An S1G STA shall include the values computed in Table 9-9a (Settings for the TXVECTOR parameter PARTIAL\_AID for 1 MHz PPDUs and NDP frames) in the PHYCONFIG\_VECTOR parameter PARTIAL\_AID\_LIST.

An S1G STA that transmits an S1G PPDU to a DLS or TDLS peer STA obtains the AID for the peer STA from the DLS Setup Request, DLS Setup Response, TDLS Setup Request or TDLS Setup Response frame.

An S1G AP should not assign to an S1G STA, an AID that results in the PARTIAL\_AID value, as computed using Equation (9-8b) or (9-8c), being equal to either

0 or (*dec*(BSSID[39:47])*mod*(29-1))+1 or (dec(OBSSID[39:47])mod(29-1))+1.

where OBSSID is the BSSID of a BSS that is not the BSS of which the AP is a member and for which the AP can be heard by the STA being assigned the AID.

An S1G STA transmitting an S1G MU PPDU sets the TXVECTOR parameter GROUP\_ID as described in 22.3.11.4 (Group ID).

As an example of the PARTIAL\_AID setting, consider the case of a BSS with BSSID 00-21-6A-AC-53-52 that has as a member a non-AP S1G STA assigned AID 5. In an NDP frame sent by the non-AP S1G STA to the S1G AP, the PARTIAL\_AID is equal to 165. In an NDP frame sent by the S1G AP to the non-AP S1G STA associated with that S1G AP, the PARTIAL\_AID is equal to 229. In a non-1 MHz S1G PPDU that is not an NDP frame and that is sent by the non-AP S1G STA to the S1G AP, the PARTIAL\_AID is set to 165. In a non-1 MHz S1G PPDU that is not an NDP frame that is sent by the S1G AP to the non-AP S1G STA associated with that S1G AP, the PARTIAL\_AID is set to 37.

NOTE - In the example above, BSSID[47:40] = 0x52, that is, BSSID[47] = 0, BSSID[46] = 1, BSSID[45] = 0, BSSID[44] = 1, etc.

NOTE-As described in IEEE Std 802-2001, the use of hyphens for the BSSID indicates hexadecimal representation rather than bit-reversed representation such that the leftmost octet in the representation is the first transmitted octet for 802.11. Using the BSSID vector numbering described above, the BSSID in IEEE Std 802-2001 hexidecimal representation is BSSID[7:0]-BSSID[15:8]- BSSID[23:16]-BSSID[31:24]- BSSID[39:32]-BSSID[47:40].

A STA transmitting an S1G PPDU that is not a 1 MHz PPDU and is not an NDP frame and that is addressed to an AP shall set the TXVECTOR parameter UPLINK\_INDICATION to 1. The UPLINK parameter shall be set to 0 for all other cases. The TXVECTOR parameter UPLINK\_INDICATION is not present for 1 MHz frames and is not present for NDP frames.

The TXVECTOR parameter COLOR is used to assist a receiving STA in identifying the BSS from which a reception originates so that the receiving STA can reduce power consumption by terminating the reception process in the case when the reception is not from the BSS with which the STA is associated. A STA transmitting an S1G PPDU that is not a 1 MHz PPDU and is not an NDP frame and that is addressed to an AP need not include the TXVECTOR parameter COLOR in the TXVECTOR. A STA transmitting an S1G PPDU that is not a 1 MHz PPDU and is not an NDP frame and that is sent by a DLS or TDLS STA in a direct path to a DLS or TDLS peer STA shall set the TXVECTOR parameter COLOR to the value of the COLOR parameter, if present, from the RXVECTOR of the most recently received frame from its associated AP or from the DO of the IBSS of which it is a member that contained a COLOR parameter,. An AP transmitting an S1G PPDU that is not a 1 MHz PPDU and is not an NDP frame and that is addressed to a STA that is associated with that AP shall set the TXVECTOR parameter COLOR to a value of its choosing within the range 0 to 7 and shall maintain that value for the duration of the existence of the BSS

An AP shall include the value within the range 0 to 7 that it is using for the TXVECTOR parameter COLOR in non-1MHz, non-NDP frames in the COLOR field of the S1G Capabilities Info field of the S1G Capabilities element in all frames that contain that element.

**8.4.2.170k.2 S1G Capabilities info field**

***TGah editor: within subclause 8.4.2.170k.2 S1G Capabilities info field, change the three reserved bits 60, 61, 62 from “reserved” to the single field “COLOR”, modify Figure 8-401dg - S1G Capabilities Info field to reflect this change and add the following row to Table 8-191d - Subfields of the S1G Capabilities Info field:***

|  |  |  |
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| COLOR | Indicates the value that is used for the TXVECTOR parameter COLOR in frames transmitted by members of this BSS, as described in 9.17b Group ID, partial AID, UPLINK and COLOR in S1G PPDUs | An unsigned integer in the range 0 to 7. |

9.48.3.2 Implicit ACK procedure

***TGah editor: within subclause 9.48.3.2 Implicit ACK procedure, change all six occurrences of “PAID” to “partial AID”***

**24.3.18.5.4 CCA sensitivity for signals occupying the Primary 2MHz and/or Primary 1MHz channel**

***TGah editor: within subclause 24.3.18.5.4 CCA sensitivity for signals occupying the Primary 2 MHz and/or Primary 1 MHz channel, change the last paragraph as shown:***

Additionally, when a STA detects a PPDU with the value of the PAID field matching its Partial AID or matching the BSSID of the BSS with which the STA is associated , the PHY shall issue a PHY-CCA.indication(BUSY, {primary2}) for the protected duration of the PPDU and when a STA detects a PPDU with the value of the COLOR field matching the BSSID of the BSS with which the STA is associated, the PHY shall issue a PHY-CCA.indication(BUSY, {primary2}) for the protected duration of the PPDU.

**References:**