IEEE P802.11  
Wireless LANs

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| Miscellaneous PHY comment resolution for LB190 | | | | |
| Date: 2012-12-13 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Yusuke Asai | NTT | 921A, 1-1, Hikarinooka, Yokosuka, Kanagawa 2390847 | +81 46 859 3494 | asai.yusuke@lab.ntt.co.jp |
|  |  |  |  |  |

Abstract

This submission contains miscellaneous PHY comment resolutions for WG LB 190.

The comments included are non-editorial comments on Clause 3.2 and Clause 22.

There are fifteen such comments: 7234, 7029, 7031, 7032, 7033, 7226, 7263, 7102, 7264, 7050, 7183, 7051, 7052, 7063 and 7182.

All comments belong to PHY ad-hoc group.

R1: Some resolutions were revised during TGac telecon on 13Dec, 2012. CID 7226 is deferred.

R0: Initial Version

| **CID** | **Commentor** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| --- | --- | --- | --- | --- | --- |
| 7234 | Sigurd Schelstraete | 5.37 | 3.2 | 80+80 MHz mask PPDU does not include 20, 40 or 80 MHz PPDU. Is this intentional? Compare with e.g. 80 MHz mask PPDU and 160 MHz mask PPDU, which include PPDUs sent with 20 , 40 and 80 MHz bandwidth. | Add 20, 40, 80 MHz PPDUs or clarify why they should not be there for 80+80. |

**Context:**

At 5.37:

**80+80 MHz mask physical layer convergence procedure (PLCP) protocol data unit (PPDU)**: A PPDU that is transmitted using the 80+80 MHz transmit spectral mask defined in Clause 22 and that is one of the following:

1. An 80+80 MHz VHT PPDU (TXVECTOR parameter CH\_BANDWIDTH set to CBW80+80)
2. An 80+80 MHz non-HT duplicate PPDU (TXVECTOR parameter CH\_BANDWIDTH set to CBW80+80)

**Discussion:**

In D1.0, the definition of 80+80 MHz mask PPDU includes 20, 40 or 80 MHz PPDUs with non-HT, non-HT duplicate, HT or VHT format. However, as discussed in 11/1192r2, TGac has agreed that PPDUs with bandwidth of 80 MHz or less should not be included in the 80+80 MHz mask PPDU definition for better spectrum usage of secondary 80 MHz channel. See the resolution to CIDs 2019, 2743 and 3123 in 11/1192r2.

**Proposed resolution to 7234:**

Rejected. As discussed in 11/1192r2, TGac has agreed that PPDUs with bandwidth of 80 MHz or less should not be included in the 80+80 MHz mask PPDU definition for better spectrum usage of secondary 80 MHz channel. See the resolution to CIDs 2019, 2743 and 3123 in 11/1192r2.

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| 7029 | Brian Hart | 222 | 22.3 | PHY is a layer not a sublayer. Also P222L6 really describes a sublayer not a layer | Retitle to VHT PHY layer. And "This subclause provides the prcedure by which PSDUs are converted to and from transmissions on the wireless medium" |

**Context:**

At 222.01:

**22.3 VHT PHY sublayer**

**22.3.1 Introduction**

This subclause provides the procedure by which PSDUs are converted to and from PPDUs.

**Proposed resolution to CID 7029:**

Accepted. <This document> provides proposed text change.

**Proposed text change:**

At 222.01:

**22.3 VHT PHY layer**

**22.3.1 Introduction**

This subclause provides the procedure by which PSDUs are converted to and from transmissions on the wireless medium.

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| --- | --- | --- | --- | --- | --- |
| 7031 | Brian Hart | 224.36 | 22.3.3 | "Multiple by 1st column of P for user 0" and below "Multiple by 1st column of P for user Nu-1" is not quite true. Should be "Multiple by user specific elements of 1st column of P for user 0" 2x | a) Make the change by lengthening the contents of the box, or b) invent a more compact term for this ...maybe "spatial P/A-multiplication" and use the new term throughout this section, a few times in 22.3.8.2.5 and other sections that use P or A, and maybe provide suitable references here. |

**Context:**

At 224.30 –65:



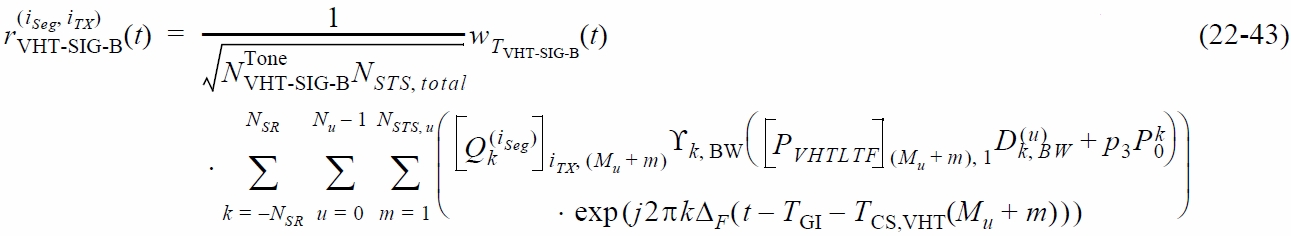
**Figure 22-7—Transmitter block diagram for the VHT-SIG-B field of a VHT MU PPDU**

**Discission:**

During D2.0 comment resolution, Figure22-7 was revised to the current version. The comment resolution document of 12/0525r4 has proposed to revise the name of the blocks as “Multiply by 1st column of *PVHTLTF* for User *u*” (*u* = 0, …, *Nu*-1). The commentor suggests that current block name is not clear. To resolve this, the resolution “a)” is seemed to be better among two because transmit block diggram should be simple as much as possible to describe the overview of transmitter functions.

In addition, the commenter proposes to change the name of the block as "Multiple by user specific elements of 1st column of *PVHTLTF* for user 0" for both of the blocks for users 0 and *Nu*-1; however, it is not correct.

Equation (22-43) defines the time domain waveform for the VHT-SIG-B field in a VHT PPDU.



In a VHT MU PPDU, “1st column of *PVHTLTF* for user *u*“ is an unique pattern for user *u*. 12/0525r4 describes an example of the “1st column of *PVHTLTF* for each user,” which is referred as Fig. I.



**Fig. I: An example for *PVHTLTF* 1st column of *PVHTLTF* for each user**

**Proposed resolution to CID 7031:**

Revised. <This document> provides proposed text change.

**Proposed text change:**

*(Note to editor: The consolidated version of the revised figure without redlines is embedded on Appendix at the end of this document.)*

At 224.30 –65:



**Figure 22-7 – Transmitter block diagram for the VHT-SIG-B field of a VHT MU PPDU**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7032 | Brian Hart | 225.07 | 22.3.3 | Poorly expressed. P225L2-5 seems to provide a solid definition of VHT-STF. But then here we define how VHT-STF is constructed ... but now it is different i.e. "similar ... but without" | Delete VHT-STF at P225L5. To the extent that this text is relevant to VHT-STF, repeat it by rolling it into the sentence at P225L6-7 |

**Context:**

At 225.01-07:

Figure 22-8 shows the transmitter blocks used to generate the Data field of a 20 MHz, 40 MHz and 80 MHz VHT SU PPDU with BCC encoding for a single frequency segment. A subset of these transmitter blocks consisting of the constellation mapper and CSD blocks, as well as the blocks to the right of, and including, the spatial mapping block, are also used to generate the VHT-STF and VHT-LTF fields. This is illustrated in Figure 22-19 for the VHT-LTF fields. A similar set of transmit blocks, but without the multiplication by *AkVHTLTF* (defined in Equation (22-36)), is used to generate the VHT-STF field.

**Discussion:**

The highlighted senteces describes the function blocks to create VHT-STF and VHT-LTF fields. The commenter proposes to revise the text for independent description between VHT-STF and VHT-LTF.

**Proposed resolution to CIDs 7032:**

Revised. 11-12/1058 provides proposed text change.

**Proposed text change:**

At 225.01-07:

Figure 22-8 shows the transmitter blocks used to generate the Data field of a 20 MHz, 40 MHz and 80 MHz VHT SU PPDU with BCC encoding for a single frequency segment. A subset of these transmitter blocks consisting of the constellation mapper and CSD blocks, as well as the blocks to the right of, and including, the spatial mapping block, are also used to generate the VHT-LTF fields. This is illustrated in Figure 22-19. A subset of these transmitter blocks consisting of the constellation mapper and CSD blocks, as well as the blocks to the right of, and including, the spatial mapping block, are also used to generate the VHT-STF fieldbut without the multiplication by *AkVHTLTF* (defined in Equation (22-36)).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7033 | Brian Hart | 228.06 | 22.3.4.3 | The CSD block is missing then "dot dot dot" then the CSD block appears. How dot-dot-dot works here is unclear | Go no-CSD-block, CSD-block dot-dot-dot-CSD-block. Ditto fr Fig 22-12 on P229 |

**Context**

At 228.01-33:



**Figure 22-11 – Transmitter block diagram for the Data field of a 160 MHz VHT SU PPDU with BCC encoding**

**Discussion:**

There should be two identical block on the both sides of the ellipsis notation “…”. In addition to Figure 22-11, Figures 22-7, 22-10, 22-12 and 22-13 should be revised according to this manner.

**Proposed resolution to CIDs 7033:**

Revised. <This document> provides proposed changes of figures.

**Proposed text change:**

*(Note to editor: The revised figures without redlines are embedded on Appendix at the end of this document.)*

At 224.30-65:

(This figure also includes the proposed resolution to CID 7031, which are blue colored.)



**Figure 22-7 – Transmitter block diagram for the VHT-SIG-B field of a VHT MU PPDU**

At 227.01-43:



**Figure 22-10 – Transmitter block siagram for the Data field of a 20 MHz, 40 MHz or 80 MHz VHT MU PPDU**

At 228.01-33:



**Figure 22-11 – Transmitter block siagram for the Data field of a 160 MHz VHT SU PPDU with BCC encoding**

At 229.01-33:



**Figure 22-12 – Transmitter block siagram for the Data field of a 160 MHz VHT SU PPDU with LDPC encoding**

At 230.01-45:



**Figure 22-13 – Transmitter block siagram for the Data field of an 80+80 MHz VHT SU PPDU with BCC encoding**

At 231.01-44



**Figure 22-14 – Transmitter block siagram for the Data field of an 80+80 MHz VHT SU PPDU with LDPC encoding**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7226 | Youhan Kim | 233.42 | 22.3.4.9.1 | 22.3.10.9.3 describes the segment deparser operation. And D3.1 had this in 22.3.4.9.1 aand 22.3.4.9.2 as well - "Segment Deparser (if needed): For a contiguous 160 MHz transmission, merge the two frequency subblocks into one frequency segment as described in 22.3.10.9.3 (Segment deparser)." However, this has been deleted in D4.0 per CID 6340 in LB188 (D3.0). However, such deletion now makes 22.3.4.9.1 and 22.3.4.9.2 not consistent with 22.3.10.9.3. Also, the sentences "For a contiguous 160 MHz transmission, map each frequency subblocks  to the upper and the lower part of one IDFT. For a non-contiguous 80+80 MHz transmission, map  each frequency subblocks to the separate IDFT." in step f) seem out of place. Probably between m) and n) is the more appropriate location. Similar comment on 22.3.4.9.2. | Include segment deparser in 22.3.4.9.1 and 22.3.4.9.2. Also, move the cited sentences in step f) to a more appropriate place. |

**Context**

At 282.07-14:

**22.3.10.9.3 Segment deparser**

For a 160 MHz VHT PPDU transmission, the two frequency subblocks at the output of the LDPC tone mapper for LDPC or constellation mapper for BCC are combined into one frequency segment as shown in Equation (22-84).

At 233.12-60

**22.3.4.9 Construction of the Data field in a VHT SU PPDU**

* + - * 1. **Using BCC**

(*Note: The strike-out sentence is referred from D4.0 with redlines.*)

…

1. Segment Parser (if needed): For a contiguous 160 MHz or non-contiguous 80+80 MHz transmission, divide the output bits of each stream parser into two frequency subblocks as described in 22.3.10.7 (Segment parser). For a contiguous 160 MHz transmission, map each frequency subblocks to the upper and the lower part of one IDFT. For a non-contiguous 80+80 MHz transmission, map each frequency subblocks to the separate IDFT. This block is bypassed for 20 MHz, 40 MHz and 80 MHz VHT PPDU transmissions.

…

1. Constellation Mapper: Map to BPSK, QPSK, 16-QAM, 64-QAM or 256-QAM constellation points as described in 22.3.10.9 (Constellation mapping).

~~j) Segment Deparser (if needed): For a contiguous 160 MHz transmission, merge the two frequency subblocks into one frequency segment as described in 22.3.10.9.3 (Segment deparser).~~

1. STBC: Apply STBC as described in 22.3.10.9.4 (Space-time block coding).
2. Pilot insertion: Insert pilots following the steps described in 22.3.10.10 (Pilot subcarriers).
3. CSD: Apply CSD for each space-time stream and frequency segment as described in 22.3.8.2.2 (Cyclic shift for VHT modulated fields).
4. Spatial Mapping: Apply the Q matrix as described in 22.3.10.11.1 (Transmission in VHT format).
5. Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in 22.3.7 (Mathematical description of signals).

…

**Discussion**

This comment is correct. D4.0 has deleted the Segment Deparser operation; however, this is needed to construct a 160 MHz VHT SU PPDU. Subclause 22.3.9.4.1 shall have some descrptions for the Segment Deparser.

In addition, the sentences in the bullet item f), “For a contiguous 160 MHz transmission, map each frequency subblocks to the upper and the lower part of one IDFT. For a non-contiguous 80+80 MHz transmission, map each frequency subblocks to the separate IDFT”, is seened to be the descrition for Segment Deparser.

This comment suggests that the location of the Segment Deparser blocks are just before DFT blocks; therefore, in addition to the text changes, the example block diagrams for 160 MHz transmission (Figures 22-11 and 12) should be revised accordingly.

**Proposed resolution to CIDs 7226:**

Revised. <This document> provides proposed text and figure changes.

**Proposed text change:**

At 233.10-60:

**22.3.4.9 Construction of the Data field in a VHT SU PPDU**

**22.3.4.9.1 Using BCC**

…

1. Segment Parser (if needed): For a contiguous 160 MHz or non-contiguous 80+80 MHz transmission, divide the output bits of each stream parser into two frequency subblocks as described in 22.3.10.7 (Segment parser). This block is bypassed for 20 MHz, 40 MHz and 80 MHz VHT PPDU transmissions.

…

1. Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in 22.3.7 (Mathematical description of signals).
2. Segment Deparser (if needed): For a contiguous 160 MHz transmission, map each frequency subblocks to the upper and the lower part of one IDFT. For a non-contiguous 80+80 MHz transmission, map each frequency subblocks to the separate IDFT. This block is bypassed for 20 MHz, 40 MHz and 80 MHz VHT PPDU transmissions.
3. IDFT: Compute the inverse discrete Fourier transform.

…

At 233.62-234.43:

**22.3.4.9.2 Using LDPC**

…

1. Segment Parser (if needed): For a contiguous 160 MHz or non-contiguous 80+80 MHz transmission,divide the output bits of each stream parser into two frequency subblocks as described in 22.3.10.7 (Segment parser). This block is bypassed for 20 MHz, 40 MHz and 80 MHz VHT PPDU transmissions.

…

1. Phase rotation: Apply the appropriate phase rotations for each 20 MHz subchannel as described in 22.3.7 (Mathematical description of signals).
2. Segment Deparser (if needed): For a contiguous 160 MHz transmission, map each frequency subblocks to the upper and the lower part of one IDFT. For a non-contiguous 80+80 MHz transmission, map each frequency subblocks to the separate IDFT. This block is bypassed for 20 MHz, 40 MHz and 80 MHz VHT PPDU transmissions.
3. IDFT: Compute the inverse discrete Fourier transform.

…

At 228.01



**Figure 22-11 – Transmitter block diagram for the Data field of a 160 MHzVHT SU PPDU with BCC encoding**

At 229.01



**Figure 22-12 – Transmitter block diagram for the Data field of a 160 MHzVHT SU PPDU with LDPC encoding**

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| --- | --- | --- | --- | --- | --- |
| 7263 | Sigurd Schelstraete | 234.50 | 22.3.4.10.1 | The statement "For an MU transmission, the PPDU encoding process is performed on a per-user basis up to the input of the Spatial Mapping block." is not consistent with some of the figures (e.g. 22-7, 22-10) | The figures 22-7 and 22-10 (correctly) show CSD prior to Spatial Mapping. The CSD for a given user is not independent of the other users. |

**Context:**

At 234.45-53:

**22.3.4.10 Construction of the Data field in a VHT MU PPDU**

**22.3.4.10.1 General**

For an MU transmission, the PPDU encoding process is performed on a per-user basis up to the input of the Spatial Mapping block. All user data is combined and mapped to the transmit chains in the Spatial Mapping block.

**Discussion:**

As the commentor points out, the CSD values depend on user positions and the number of spatial streams for each user. In SU case, the CSD value for the first spatial stream is always zero; however, for example, the first spatial stream for user 1 is not zero as long as the user 0 is valid for the MU transmission.

**Proposed resolution to CIDs 7263:**

Revised. <This document> provides proposed text change.

**Proposed text change:**

At 223.44-53:

**22.3.4.10 Construction of the Data field in a VHT MU PPDU**

**22.3.4.10.1 General**

For an MU transmission, the PPDU encoding process is performed on a per-user basis up to the input of the Spatial Mapping block except CSD (as described in 22.3.8.2.2 (Cyclic shift for VHT modulated fields)). All user data is combined and mapped to the transmit chains in the Spatial Mapping block.

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| 7102 | Youhan Kim | 237.15 | 22.3.6 | Is Ncbpss for VHT-SIG-B the number of coded bits before or after SIG-B repetition+padding? If former, the Ncbpss does not equal Nsd for VHT-SIG-B. | Please clarify |
| 7264 | Sigurd Schelstraete | 237.16 | 22.3.6 | Replace "For VHT\_SIG-B, N\_CBPSS = N\_SD for all users" with "For VHT\_SIG-B, N\_CBPSS,u = N\_SD for user u=0, ..., N\_u -1" | See comment |

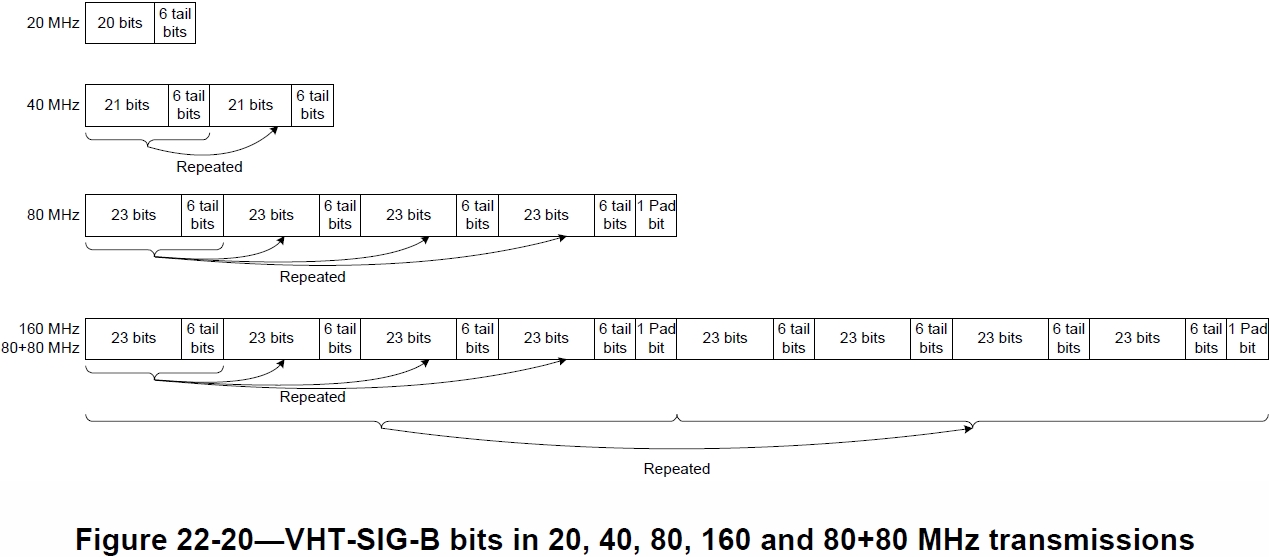
**Context:**

At 237.15:

**Table 22-6—Frequently used parameters**

|  |  |
| --- | --- |
| *NCBPSS*, *NCBPSS*,*u* | Number of coded bits per symbol per spatial stream.  For the VHT\_SIG-B field, *NCBPSS* = *NSD* for all users.  For the Data field, *NCBPSS*,*u* equals the number of coded bits per symbol per spatial stream for user *u*, *u* = 0, ..., *Nu*-1.  For the Data field of a VHT SU PPDU, *NCBPSS* = *NCBPSS*,0  For the Data field of a VHT MU PPDU, *NCBPSS* is undefined |

At 262.09:



**Discussion:**

The relation between number of coded bits in VHT-SIG-B and *NSD* is as follows:

(*NSD* is defined in Table 22-5 (Timing-related constants).)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Bandwidth  [MHz] | *NSD* | *NCBPSS* for VHT-SIG-B | | | |
| w/o tail and pad | | with tail and pad | |
| # of info. bits | # of CODED bits | # of info. bits | # of CODED bits |
| 20 | 52 | 20 | 40 | 26 | 52 |
| 40 | 108 | 42 | 42 | 54 | 108 |
| 80 | 234 | 92 | 46 | 117 | 234 |
| 80+80 | 234 | 188 | 376 | 234 | 468 |
| 160 | 468 | 188 | 376 | 234 | 468 |

This table shows that the original information of the coded bits in the definition of *NCBPSS* does include tail and pad bits. In addition, it is found that *NCBPSS* in 80+80 MHz transmission is not equal to *NSD*.

On the other hands, actually, subclause 22.3.8.2.6 (VHT-SIG-B definition) does not use the parameter *NCBPSS* to define the waveform of VHT-SIG-B. It can also be considerd that the sentence is redandunt.

**Proposed resolution to CIDs 7102 and 7264:**

Revised. <This document> provides proposed text change.

**Proposed text change:**

At 237.15

|  |  |
| --- | --- |
| *NCBPSS*, *NCBPSS*,*u* | Number of coded bits per symbol per spatial stream.  For the VHT-SIG-B field, *NCBPSS* is common for all users.   * *NCBPSS* = *NSD* for a 20 MHz, 40 MHz, 80 MHz or 160 MHz PPDU * *NCBPSS* = 2*NSD* for an 80+80 MHz PPDU   for all users.  For the Data field, *NCBPSS*,*u* equals the number of coded bits per symbol per spatial stream for user *u*, *u* = 0, ..., *Nu*-1.  For the Data field of a VHT SU PPDU, *NCBPSS* = *NCBPSS*,0  For the Data field of a VHT MU PPDU, *NCBPSS* is undefined |



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| 7050 | Brian Hart | 238.28 | 22.3.6 | "For the Data field NESu is the number of BCC encoders ... " is inconsistent with "For the Data field encoded using LDPC, NES=1 ..." | Change first citation to "For the Data field encoded using BCC, NESu is the number of BCC encoders ...". Move the next two rows to the end since they apply to both BCC and LDPC |

**Context:**

At 238.28:

|  |  |
| --- | --- |
| *NES*, *NES,u* | The number of BCC encoders.  For the VHT-SIG-B field, *NES* = 1 for each user.  For the Data field, *NES*,*u* is the number of BCC encoders for the Data field for user *u*, *u* = 0,…, *Nu*-1.  For the Data field of a VHT SU PPDU, *NES* = *NES*,0.  For the Data field of a VHT MU PPDU, *NES* is undefined.  For the Data field encoded using LDPC, *NES* = 1 for a VHT SU PPDU and *NES*,*u* = 1 for a VHT MU PPDU for user *u*, *u* = 0, …*Nu*-1 |

**Discussion:**

At 238.28:

As the commentor proposes, the order change of the sentences makes the definition of *NES* clearer.

**Proposed resolution to CID 7050:**

Accepted. <This document> provides proposed text change.

**Proposed text change:**

At 238.28:

|  |  |
| --- | --- |
| *NES*, *NES,u* | The number of BCC encoders.  For the VHT-SIG-B field, *NES* = 1 for each user.  For the Data field encoded using BCC, *NES*,*u* is the number of BCC encoders for the Data field for user *u*, *u* = 0,…, *Nu*-1.  For the Data field encoded using LDPC, *NES* = 1 for a VHT SU PPDU and *NES*,*u* = 1 for a VHT MU PPDU for user *u*, *u* = 0, …*Nu*-1  For the Data field of a VHT SU PPDU, *NES* = *NES*,0.  For the Data field of a VHT MU PPDU, *NES* is undefined. |

|  |  |  |  |  |  |
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| 7183 | Yusuke Asai | 238.43 | 22.3.6 | The explanation is copied from P217L21 in D3.0. The resolution to CID 6591 in 12/1057r1 proposes to revise the descrption of M\_u in D3.0; which should be applied in this field. | Please revise it. |

**Context:**

At 238.43:

|  |  |
| --- | --- |
| *Mu* | For pre-VHT modulated fields, *Mu* = 0. For VHT modulated fields,  with *M*0 = 0. |

**Discussion:**

The explanation of the *Mu* in D4.0 is seemed to be old version, which should be revised according to the resolution to CID6591 in 12/1057r1.

(The resolution to CID 6591 is as follows: )

|  |  |
| --- | --- |
| *Mu* | For pre-VHT modulated fields, *Mu* = 0. For VHT modulated fields, *M*0 = 0 for *u* = 0 and  for *u* = 1, …, *Nu*-1. |

**Proposed resolution to CID 7050:**

Accepted. The resolution to CID 6591 in 12/1057r1 provides proposed text change.

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| 7051 | Brian Hart | 238.49 | 22.3.6 | Notes asserting important stuff without references are very untrustworthy. | Add reference to 22.3.7 and/or Fig 22-15 |

**Context:**

At 238.49:

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| --- |
| NOTE 1—pre-VHT modulated fields refer to the L-STF, L-LTF, L-SIG and VHT-SIG-A fields, while VHT modulated fields refer to the VHT-STF, VHT-LTF, VHT-SIG-B and Data fields  NOTE 2—For pre-VHT modulated fields, *u* is 0 only since *Nu* = 1 |

**Discussion:**

As the commentor points out, NOTEs should have references.

**Proposed resolution to CID 7051:**

Accepted. <This document> provides proposed text change.

**Proposed text change:**

At 238.49:

|  |
| --- |
| NOTE 1—pre-VHT modulated fields refer to the L-STF, L-LTF, L-SIG and VHT-SIG-A fields, while VHT modulated fields refer to the VHT-STF, VHT-LTF, VHT-SIG-B and Data fields (See Figure 22-15)  NOTE 2—For pre-VHT modulated fields, *u* is 0 only since *Nu* = 1 |

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| 7052 | Brian Hart | 241.06 | 22.3.7 | This dot11 break down replicates what is already defined at P239L20-30 | Give the definitions at P239L20-30 equation numbers, then just reference threse 4 equation numbers at P241L7-11. ... But maybe preserve the dot11ChannelStartingFactor \* 500 kHz by moving it to P239? |

**Context:**

At 239.20-30:

*fc*,idx0 = dot11CurrentChannelCenterFrequencyIndex0 (see Table 22-22 (Fields to specify VHT channels))

*fc*,idx1 = dot11CurrentChannelCenterFrequencyIndex1 (see Table 22-22 (Fields to specify VHT channels))

*f*p20,idx = dot11CurrentPrimaryChannel (see Table 22-22 (Fields to specify VHT channels))

*f*CH,start = Channel stating frequency given in the operation class (see Annex E)

At 241.04-11:

*f*(*iSeg*)*c* represents the center frequency of the portion of the PPDU transmitted in frequency segment *iSeg*. Table 22-7 (Center frequency of the portion of the PPDU transmitted in frequency segment *iSeg*) shows *f*(*iSeg*)*c* as a function of dot11CurrentChannelBandwidth (see Table 22-22 (Fields to specify VHT channels)) where *fc*,idx0 = dot11CurrentChannelCenterFrequencyIndex0,

*fc*,idx1 = dot11CurrentChannelCenterFrequencyIndex1 (see Table 22-22 (Fields to specify VHT channels)), and *f*p20,idx, *f*p40,idx, and *f*p80,idx are given in Equation (22-1), Equation (22-3) and

Equation (22-5), respectively. *f*CH,start is defined as dot11ChannelStartingFactor 500 kHz.

**Discussion:**

The definition of *f*(*iSeg*)*c* includes the definition of the parameters *fc*,idx0 and *fc*,idx1 from Table 22-22; however, previous text in P239L20-30 also defines these parameters and such redundancy should be revised. *f*CH,start is also defined twice.

**Proposed resolution to CID 7052:**

Revised. <This document> provides proposed text change.

**Proposed text change:**

(*Note to Editor: Please renumber (22-a), (22-b) and (22-c)*)

At 239.20-30:

*fc*,idx0 = dot11CurrentChannelCenterFrequencyIndex0 (see Table 22-22 (Fields to specify VHT channels)) (22-a)

*fc*,idx1 = dot11CurrentChannelCenterFrequencyIndex1 (see Table 22-22 (Fields to specify VHT channels)) (22-b)

*f*p20,idx = dot11CurrentPrimaryChannel (see Table 22-22 (Fields to specify VHT channels))

*f*CH,start = dot11ChannelStartingFactor 500 kHz (22-c)

At 241.04-11:

*f*(*iSeg*)*c* represents the center frequency of the portion of the PPDU transmitted in frequency segment *iSeg*. Table 22-7 (Center frequency of the portion of the PPDU transmitted in frequency segment *iSeg*) shows *f*(*iSeg*)*c* as a function of dot11CurrentChannelBandwidth (see Table 22-22 (Fields to specify VHT channels)) where *fc*,idx0,

*fc*,idx1 *f*p20,idx, *f*p40,idx, *f*p80,idx and *f*CH,start are given in Equation (22-a), Equation (22-b), Equation (22-1), Equation (22-3), Equation (22-5) and Equation (22-c), respectively.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 7063 | Brian Hart | 208.01 | 22 | I though we have chosen to replace Nu by Nusers, so u could be used as an index without risk? | Nu => Nusers |
| 7182 | Yusuke Asai | 237.49 | 22.3.6 | During D3.0 comment resolution, TGac approved that N\_u is replaced with N\_user throughout the draft (please see 12/0812r1 and Motion # 35); however, D4.0 has not been revised yet. | Please revise it. |

**Context:**

At 237.49:

|  |  |
| --- | --- |
| *Nu* | For pre-VHT modulated fields, *Nu* = 1. For VHT modulated fields, *Nu* represents the number of users in the transmission (equal to the TXVECTOR parameter NUM\_USERS). |

**Discussion:**

During D3.0 comment resolution, we have conducted a stral poll and replace *Nu* with *Nuser* throughout the draft.

*(referred from 12/0850r1)*

*Straw Poll in TGac F2F meeting (12Jul): Which one do you prefer?(Yes/No)*

* *Nu (remains as it is): 0/7*
* *NU (change u to U): 3/1*
* *Nuser (change u to user): 15/0*
* *Others: 0/0*

**Proposed resolution to CIDs 7063 and 7182:**

Acceped. Replace N\_u with N\_{user} throughput the draft D4.0.

**Appendix:**

The following embedded figures include the proposed resolutions to CIDs 7031, 7033, 7063 and 7182.

