IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 802.11 TGac WG Letter Ballot LB188  Proposed resolutions on Miscellaneous PHY Comments – Part 2 | | | | |
| Date: 2012-09-05 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Youhan Kim | Qualcomm | 1700 Technology Drive  San Jose, CA 95110 |  | [youhank@qca.qualcomm.com](mailto:youhank@qca.qualcomm.com) |

##### Comments are based on 11ac D3.0. Proposed resolutions are based on 11ac D3.1. Changes indicated by a mixture of Word track-changes and instructions. For equation changes, Latex notation is sometimes used. E.g. a\_{xyz}^b denotes axyzb

Following CIDs are covered in this document (total 6):

PHY: 6610, 6322, 6611, 6612, 6613, 6614

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6610 | 253.56 | 22.3.10.9.1 | Add range of index u to Equation (22-82) | Add "u=0, ..., N\_u -1" |

**Discussion:**

Context (D3.0 P253):



d' has five subscripts, four of which have explicit range specified. Only ‘u’ does not have a range specified. Thus, it seems reasonable to add a range for ‘u’ as suggested by the commenter.

**Proposed Resolution:**

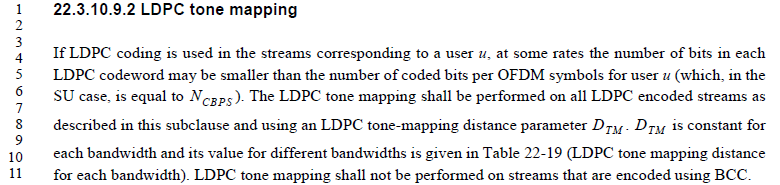
CID 6610:

ACCEPT

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6322 | 254.04 | 22.3.10.9.2 | The first sentence of this paragraph is somewhat confusing. First, it describes there are some "special cases" that at some rates the number of bits in each LDPC codeword may be smaller than the number of coded bits per OFDM symbols. But, in the following text, the introduced LDPC tone mapping operation has nothing to do with these "special cases". It seems unnecessary to have this kind of the first senctence. | Suggest to put the first senctence at the end of the paragraph as a note, or directly remove it, or give some further explanation. |

**Discussion:**

Context (D3.0 P254):



The first sentence is trying to give some context on why an LDPC tone mapping was added in 11ac. But as the commenter has pointed out, the description is not clear and incomplete. Note that the purpose of this section is not to give detailed background information, but rather to provide clear description on to transmit a PPDU using LDPC encoding. The section is clear enough to readers on how to perform LDPC tone mapping without the first sentence. Interested users can easily search for IEEE presentation materials which gives detailed explanation (e.g. 11-10/1300r0).

**Proposed Resolution:**

CID 6322:

REVISE. See proposed text change in 11-12/1039r0 under CID 6322 which deletes the unnecessary first sentence.

**Proposed Text Change:**

*Change D3.1 P261L3 as follows:*

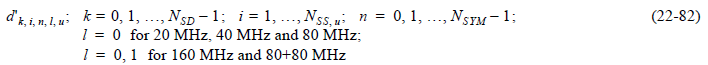
The LDPC tone mapping shall be performed on all LDPC encoded streams as described in this subclause and using an LDPC tone-mapping distance parameter *DTM*.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6611 | 254.28 | 22.3.10.9.2 | Equation (22-83) is exact copy of Equation (22-82). There is no need to repeat it here. | Delete Equation (22-83) |

**Discussion:**

Context:

D3.1 P260L56:



D3.1 P261L28:



As the commenter has noted, Equations (22-82) and (22-83) are identical to each other. Hence, Equation (22-83) may be deleted.

**Proposed Resolution:**

CID 6611:

REVISE. See proposed text change in 11-12/1039r0 under CID 6611 which deletes Equation (22-83).

**Proposed Text Change:**

*Change D3.1 P261L24 as follows:*

For a 20 MHz, 40 MHz and 80 MHz VHT PPDU transmission, the LDPC tone mapping for LDPC-coded streams corresponding to user *u* is done by permuting the stream of complex numbers generated by the constellation mappers (see Equation (22-82)) to obtain

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6612 | 254.51 | 22.3.10.9.2 | Troughout the paragraph starting at line 51, user index is missing from d' and d'' | Add user index |

**Discussion:**

D3.0 P261:



d' and d’’ should have user index *u* as one of its subscripts as shown in Equation (22-84).

**Proposed Resolution:**

CID 6612:

REVISE. See proposed text change in 11-12/1039r0 under CID 6612 which adds the user index.

**Proposed Text Change:**

*Change D3.1 P261L51 as follows:*

As a result of the LDPC tone mapping operation above, each two consecutively generated complex constellation numbers  and  will be transmitted on two data tones that are separated by at least  from other data tones. Note that the operation above is equivalent to block-interleaving the complex numbers  for each *i*, *n* and *u* using a matrix with  rows and  (for 20 MHz, 40 MHz, 80 MHz or 80+80 MHz) or  (for 160 MHz) columns, where  are written row-wise into the matrix, and  are read column-wise from the matrix.

NOTE – LDPC tone mapping is performed separately for the upper and lower 80 MHz segments of a 160 MHz of 80+80 MHz transmission as indicated by the frequency subblock index *l* in Equation (22-84) and Equation (22-85).

Since LDPC tone mapping is not performed on BCC-coded streams, for BCC-coded streams, we have

 (22-86)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6613 | 260.21 | 22.3.10.12 | Use of shall is not appropriate here. This looks more like a definition | Replace "shall be a non-HT duplicate" with "is a non-HT duplicate" |

**Discussion:**

Context (D3.0 P260):



Agree with the commenter that this is more of a definition.

**Proposed Resolution:**

CID 6613:

ACCEPT.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** |
| 6614 | 260.23 | 22.3.10.12 | Is use of non-HT duplicate explicitly restricted to sending of control frames? If not, is it allowed to have data communication with another STA in "a part" (line 23) of the channel, which may or may not be the primary channel? | Clarify |

**Discussion:**

Context (D3.0 P260):



Clause 22 is a PHY clause, and simply defines the physical waveform. How a non-HT duplicate transmission is used (e.g. control frame, data transmission, etc) is not the scope of Clause 22, hence does not need to be clarified in this section. Please note that IEEE 802.11-2012 (P29) defines a non\_HT duplicate to be “a transmission format of the physical layer (PHY) that duplicates a 20 MHz non-HT transmission in two adjacent 20 MHz channels and allows a station (STA) in a non-HT basic service set (BSS) on either channel to receive the transmission” and does not restrict the use of a non-HT duplicate to control frames.

As for whether the a non-HT duplicate PPDU can be transmitted within a BSS not including the primary 20 MHz channel, Table 22-2 in 22.2.3 (D3.1 P197) clearly states that the transmission includes the primary 20 MHz channel.

**Proposed Resolution:**

CID 6614:

REVISE. See proposed text change in 11-12/1039r0 under CID 6614 which adds a note indicating that primary 20 MHz channel is included in non-HT duplicate transmissions.

**Proposed Text Change:**

*Add the following NOTE after D3.1 P267L24:*

NOTE –Non-HT duplicate transmissions with the CH\_BANDWIDTH parameter equal to CBW40 or CBW80 uses the primary 40 MHz or primary 80 MHz channel, respectively, when transmitted within a BSS whose operating channel width is wider than the CH\_BANDWIDTH parameter. See Table 22-2 (PPDU format as a function of CH\_BANDWIDTH parameter).

[EOF]