IEEE P802.11
Wireless LANs

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| D0.1 Comment Resolution – CID 1589, 295, 1219, 296, 297, 1634, 429, 430, 431, 432 |
| Date: 7 May 2011 |
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Abstract

This document provides resolutions for CIDs 1589, 295, 1219, 296, 297, 1634, 429, 430, 431, 432.

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| 1589 | 7.3.2.61.2 | 30 | 4 | TBD encodings for "Short GI for 20/40/80/160" and "Rx STBC" fields | define encodings for these fields | Accept |

<Discussion>

Refer to resolution to duplicate CIDs (1325, 1499, 108, 110, 138, 1026, 1141, 1253, 1326, 1411, 1456, 1480, 929) in “11-11-0602-00-00ac-short-gi-indication” by Raja Barnerjea.

**TGac editor: refer to resolution to duplicate CIDs, which is provided by “11-11-0602-00-00ac-short-gi-indication”**

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| 295 | 22.3.2 | 79 | 8 | At this point, with current terminology, we are introducing elements rather than fields, so I suggest replacing "VHT-LTF … VHT-LTF" in the diagram by "VHT-LTFs", to harmonize with the table.  | As in comment | Accept in principle |
| 1219 | 22.3.2 | 79 | 12 | We launch into block diagrams without giving any description of multi-user PPDU format. | Add "Single User" to figure 22-1. Add a new figure "... Multi User", which is a copy of Figure 22-1, but replicates the per-user fields (sig-b and data) visually stacked to indicate these are replicated per user.At 79.43 add a new para: "All fields up to and including the VHT-LTFs are common to all users. The VHT-SIG-B and Data fields are per user." | Reject |
| 297 | 22.3.2 | 79 | 42 | Insert informative language that an NDP does not contain a Data element | As in comment | Accept |
| 296 | 22.3.2 | 79 | 42 | frame = MPDU (e.g. 7.1.0a or 7.1.1); so I think PPDU is appropriate here, not "Frame". Issue is repeated 12 times in this clause - search/replace for instances of "Frame" and replace by PPDU (or packet?) (excepting 22.3.12.3 "Group ID Mgmt frame"). Also, "MU transmission" sounds like trying to find a term, when I suggest "MU PPDU" is the right term - search/replace also | As in comment | Counter |

<Discussion>

Modification to Figure 22-1 is needed as suggested by CID #295. But, introducing a term “element” rather than existing “field” in the subsequent paragraph is rejected in order to match to the expression change by approved resolution to CID #359, in which field/sub-field terminology is already provided (refer to “11-11-0372-02-00ac-d0-1-comment-reoslution-brianh”).

About CID #1219, I’m not so sure if the resolution is quite an improvement. I liked the old text and picture better because of its generality. People can figure out from the specification that VHT-SIG-B is different per user. For 11n and for SU the (V)HT LTFs and DATA are different per spatial stream, but we are not showing that in the figures, therefore I don’t see the need to show this specifically for MU either. I would like to suggest to reject the comment based on above reasoning.

About NDP description, there is already a similar description about VHS-SIG-A, VHT-STF, VHT-LTF and VHT-SIG-B, that is, these fields are not present in non-HT duplicate format and so on. So, accepting this CID #297 seems helpful for understanding the paragraph.

About terminology alternative between “frame” and “PPDU”, I think there are a couple of instances in clause 22, in which their focus is especially on the PHY data structure, while the others are mentioned with not so much stress on the PHY data structure, in which keeping the existing terminology is more appropriate. In addition, “frame” is one of very frequently-used terms in the entire draft.

About terminology alternative between “MU transmission” and “MU PPDU”, I think in most instances in the current draft “MU transmission” or “SU transmission” has just a meaning of the condition when MU or SU is targeted for transmission. So, keeping the existing terminology seems more appropriate.

**TGac editor: modify D0.4 P103L58--65, as follows**



Figure 22‑1 -- VHT PPDU format

**TGac editor: modify D0.4 P104L30--36, as follows**

The VHT-SIG-A, VHT-STF, VHT-LTF, and VHT-SIG-B fields exist only in VHT packets. In non-

HT, non-HT duplicate formats, and HT formats, these fields are not present. In an NDP packet, the Data field is not present. The number of symbols in VHT-LTF field, *NVHTLTF*, can be either 1, 2, 4, 6 or 8 and is determined by the total number of space time streams across all users being transmitted in the VHT PPDU (see Table 22-10 (Number of LTFs required for different numbers of space time streams)).

**TGac editor: modify D0.4 P126L10--17, as follows**

Throughout the VHT portion of a VHT format preamble, cyclic shifts are applied to prevent beamforming

when similar signals are transmitted in different space-time streams. The same cyclic shift is applied

to these streams during the transmission of the Data field of the VHT PPDU. The cyclic shift value

for the portion of the packet following the VHT-SIG-A field for space-time stream *n* out

of *NSTS,total* total space-time streams is shown in Table 22-8 (Cyclic shift values of VHT portion of packet).

**TGac editor: modify D0.4 P142L1--5, as follows**

When BCC FEC encoding is used, the number of encoders is determined by rate-dependent

parameters as defined in 22.5 (Parameters for VHT MCSs). The operation of the BCC FEC is described in

22.3.11.5.1 (Binary convolutional coding). The operation of the LDPC coder is described in 22.3.11.5.2 (LDPC

coding). Support for the reception of BCC-encoded Data field is mandatory.

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| 1634 | 22.3.9.2.5 | 106 | 33 | There is a little ambiguity about the title of Table 22-10 | Number of VHT LTFs | Accept |

<Discussion>

Adding “VHT” seems helpful for understanding the paragraph.

**TGac editor: modify D0.4 P132L4, as follows**

**Table 22-10—Number of VHT-LTFs required for different numbers of space time streams**

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| 429 | 22.3.11.6 | 121 | 2 | This section is confusing since "blocks" is used in two distinct senses: P121L2 and P121L34 | Rewrite using distinct terminology | Accept in principle |
| 430 | 22.3.11.6 | 121 | 7 | Should be NCBPSS/2-1 | As in comment | Accept |
| 431 | 22.3.11.6 | 121 | 31 | This paragraph is a good introduction but is not as precise as math | Define these important special cases via math. And with normative language. As well, in the same way that the math for a deinterleaver is defined, define the math for a segment deparser.  | Accept in princple |
| 432 | 22.3.11.6 | 121 | 36 | Need an equation for R | As in comment | Accept |

<Discussion>

To resolve any ambiguity, I introduced several distinct terms as follows: (block, subblock, set and subset)

unit of a block : *NCBPSS* bits

unit of a subblock : *NCBPSS/2* bits

unit of a set : *2s·NES* bits

unit of a subset : *s* bits

I added some mathematical expression for corner cases in which  is not divisible by . Please keep in mind that even in these cases  is divisible by 2*s* in all the VHT transmissions.

About a segment deparser, it is needed to define this behavior because a segment deparser can be located just after the LDPC tone mapper in the 160MHz transmission. This is mentioned in CID #306 and CID #435, which will be handled by Youhan Kim’s resolution “11-0684-00-00ac-d0-1-segment-deparser”. About a segment deparser in the receiver as a pair of the segment parser in the transmitter, I don’t think that it is needed to describe in detail in the standard.

**TGac editor: modify D0.4 P145L61—P146L32, as follows**

For a contiguous 160 MHz or a non-contiguous 80+80 MHz transmission, the output bits of each stream

parser are first divided into blocks of bits. Then, each block is further divided into two subblocks of bits as shown in Equation (22-58).

 $y\_{k,}=x\_{2s∙N\_{ES}\left⌊\frac{k}{s∙N\_{ES}}\right⌋+l∙s∙N\_{ES}+k mod \left(s∙N\_{ES}\right)}, k=0,1,\cdots ,\frac{N\_{CBPSS}}{2}$ (22-58)

where

 is the largest integer less than or equal to 

 is the remainder resulting from the division of integer  by integer 

 is the th bit of a block of  bits, = 0 to 

 is the subblock index, 

 is bit *k* of the subblock 

 is defined in Equation (22-55)

 is defined in Table 22-5 (Frequently used parameters)

If  is not divisible by , then apply the segment parsing method described in Equation (22-58) for  sets of  segment parser input bits. At this point, each stream parser output has  ($R=$$\frac{\_{}\left(\_{}\right)}{}\_{}$) residue bits. Then, the residue bits are divided into subsets of  bits, with each subset being assigned to different subblock () in a round robin fashion. The first  bits are assigned to the subblock with index . Repeat  times until all bits are distributed to the two subblocks. That is, if  is not divisible by , each block is further divided into two subblocks of bits as shown in Equation (22-XY).

 $y\_{k,l}=$$\left\{\begin{array}{c}\_{\_{}\left⌊\frac{}{\_{}}\right⌋\_{}\left(\_{}\right)}\frac{\left⌊{\_{}}/{\_{}}\right⌋}{\_{}}\\\_{\_{}\left⌊\frac{}{\_{}}\right⌋\left⌊\frac{}{}\right⌋}\frac{\left⌊{\_{}}/{\_{}}\right⌋}{\_{}}\frac{\_{}}{}\end{array}\right.$ (22-XY)

Segment parser is bypassed in case of 20, 40 and 80 MHz VHT PPDU transmissions.