IEEE P802.11
Wireless LANs

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| D1.0 Comment Resolution – Clause 22.3.7 |
| Date: Sep. 19 2011 |
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Abstract

This document provides resolutions for CIDs 2393, 2394, 2963, 3606, 2395, 2396, 2397, 2398, 3142, 2401, 2403.

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 2393 | 132.16 | 22.3.7 | "Nseg=2.. =1" duplicates Table 22-4. | Provide reference and remove duplication | AGREE in PRINCIPLE. See in 11/1324r0.  |
| <Discussion>As the commenter pointed out, referring Table 22-4 seems enough.  **TGac editor: modify the D1.1 text from P152L19, as follows** represents the number of frequency segments in the transmit signal(#900), as defined in Table 22-4 (Timing-related constants)(#351).  |
| 2394 | 132.28 | 22.3.7 | fc,idx1 | fc,idx2 | AGREE. See in 11/1324r0. |
| <Discussion>I fixed this typo as the commenter pointed out.  **TGac editor: modify the D1.1 text from P152L19, as follows** represents the center frequency of the PPDU transmitted in frequency segment . Table 22-6 (Center frequency of a PPDU transmitted in frequency segment iSeg) shows  as a function of dot11CurrentChannelBandwidth (see Table 22-18 (Fields to specify VHT channels)) where  = dot11CurrentChannelCenterFrequencyIndex1, *fc,idx2* = dot11CurrentChannelCenterFrequencyIndex2 (see Table 22-18 (Fields to specify VHT channels)), and ,  and  are given in Equations (22-1), (22-3) and (22-5), respectively.  is the channel starting frequency given in the operation class (Annex E). |
| 2963 | 133.15 | 22.3.7 | In the case of 80+80 MHz, the center frequency of segment 1 is given incorrectly, in which there is lack of the starting frequency.  | Add the starting frequency to the formula given in the table. | Duplicate with CID 3247. |
| 2395 | 133.16 | 22.3.7 | 5xfc,idx2 | fCH,start+5xfc,idx2 | Duplicate with CID 3247. |
| 3606 | 133.16 | 22.3.7 | The center frequency for i\_ Seg=1 does not include an f\_CH,start term | Add it. | Duplicate with CID 3247 |
| 3000 | 133.15 | 22.3.7 | In the case of 80+80 MHz, the center frequency of segment 1 is given incorrectly, in which there is lack of the starting frequency.  | Add the starting frequency to the formula given in the table. | Duplicate with CID 3247 |
| <Discussion>It is right. But, it is already introduced in D1.1 by resolution to CID 3247, one of editorial comments.  |
| 2396 | 133.20 | 22.3.7 | "different phase and/or phase noise" but also different PA gain, gain compression characteristic, etc | "different impairments such as phase or phase noise" | AGREE in PRINCIPLE. See in 11/1324r0. |
| <Discussion>It seems better to have more general description. **TGac editor: modify the D1.1 text from P153L36, as follows**NOTE 1—Transmitted signals may have different impairments such as phase offset or phase noisebetween the two frequency segments, which is not shown in Equation (22-7) for simplicity. |
| 2397 | 134.28 | 22.3.7 | "X\_k,u^iseg,iTx, yet Q maps from STS m to iTx so X should have superscript m not iTx. Ditto definition of X on P136L13 | As in comment | AGREE. See in 11/1324r0. |
| <Discussion>*m* is a variable which means the order of the corresponding spatial, instead of *iTX*.I’ve also found the similar errors in the equation in clause 22.3.10.11.1. **TGac editor: modify the D1.1 text from P154L47, as follows**Replace *iTX* for *X* vector by *m* in the following equation:*

**TGac editor: modify the D1.1 text from P156L19, as follows**Replace *iTX* by *m* in the following paragraph The frequency-domain symbol (#1169) represent(#363) the output of any spatial processing in subcarrier *k* of user *u* for frequency segment  of transmit chain . Some of the within  may have a value of zero. Examples of such cases include the DC tones, guard tones on each side of the transmit spectrum, as well as the unmodulated tones of L-STF and VHT-STF symbols.**TGac editor: modify the D1.1 text from P192L28, as follows**Replace *iSTS,u* by *m* for the symbol vector *Dk*, in the following paragraph, as well.(#374)where*z* is 4*pn* is defined in 17.3.5.10 (OFDM modulation)(Ed) is defined in 22.3.10.10 (Pilot subcarriers) is defined in Equations (22-10), (22-11), (22-12) and (22-13) (#374) is the transmitted constellation for user *u* at subcarrier *k*, space-time stream and Data field OFDM symbol *n* |
| 2398 | 135.30 | 22.3.7 | The note could be cleaner if NON-HT-DUP were replaced by NON\_HT\_DUP\_OFDM-Data, 2x in this section, with the edit "For notional convenience, NON\_HT\_DUP\_OFDM-Data is used as a label for the Data field of a NON\_HT format PPDU with subformat NON\_HT\_DUP\_OFDM"; ditto change the label in eqn 22-87. Note: nothing in the table heading constrains it to apply to VHT format PPDUs, so omit last sentence | As in comment | AGREE in PRINCIPLE. See in 11/1324r0. |
| <Discussion>It seems more exact to change because NON\_HT\_DUP itself may make some ambiguity on its modulation type. **TGac editor: modify the D1.1 text from P155L30, as follows**

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| * Value of tone scaling factor
 |
| Field |  as a function of bandwidth per frequency segment |
| 20 MHz | 40 MHz | 80 MHz | 160 MHz |
| L-STF | 12 | 24 | 48 | 96 |
| L-LTF | 52 | 104 | 208 | 416 |
| L-SIG | 52 | 104 | 208 | 416 |
| VHT-SIG-A | 52 | 104 | 208 | 416 |
| VHT-STF | 12 | 24 | 48 | 96 |
| VHT-LTF | 56 | 114 | 242 | 484 |
| VHT-SIG-B | 56 | 114 | 242 | 484 |
| VHT-Data | 56 | 114 | 242 | 484 |
|  NON\_HT\_DUP\_OFDM-Data | - | 104 | 208 | 416 |
| NOTE— For notational convenience, NON\_HT\_DUP\_OFDM-Data is used as a label for the Data field of a NON\_HT format PPDU with subformat NON\_HT\_DUP\_OFDM (#367). |

**TGac editor: modify the D1.1 text from P194L34, as follows**Replace NON\_HT\_DUP in the following equation by NON\_HT\_DUP\_OFDM-Data.(22-94)(#635)(#384)where and  are defined in 22.3.8.1.4 (L-SIG definition)(#384)*Pk* and *pn* are defined in 17.3.5.10 (OFDM modulation)(Ed)*Dk*,*n* is defined in 19.3.9.4.3 (HT-SIG definition)(Ed) is defined in Equations (22-12) and (22-13) represents the cyclic shift for transmitter chain  with a value given in Table 22-8 (Cyclic shift values for L-STF, L-LTF, L-SIG and VHT-SIG-A fields of the packet)(#1557)(#635) has the value given in Table 22-7 (Value of tone scaling factor) |
| <Discussion> **TGac editor: modify the D1.1 text from P152L19, as follows** |
| 2401 | 135.51 | 22.3.7 | 2 <= Nu <= 4. Cognizant with the inconsistency with Table 22-5, merge this into Table 22-5, shorten the explanation for Nu here, and cross ref to Table 22-5.  | As in comment | AGREE in PRINCIPLE. See in 11/1324r0.  |
| 3142 | 135.51 | 22.3.7 | "For MU transmissions, the VHT shall have…", seems like an odd place to put the requirement for MU to have two or more users. | Change the shall to is, and ensure that the normative requirement is in somewhere like 22.3.11 where one could reasonably find MU-MIMO requirements. | AGREE in PRINCIPLE. See in 11/1324r0. |
| <Discussion>I’ve also found some mismatch about the number of users in MU transmission in clause 22.3.11.1 and fixed it.**TGac editor: modify the D1.1 text from P150L01, as follows**

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| * Frequently used parameters
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| Symbol | Explanation |
| *NCBPS*(#347) | Number of coded bits per symbol |
| *NCBPSS* | Number of coded bits per symbol per spatial stream |
| *NCBPSSI* | Number of coded bits per symbol per spatial stream per BCC interleaver block(#346) |
| *NDBPS* | Number of data bits per symbol |
| *NBPSC* | Number of coded bits per subcarrier over all spatial streams |
| *NBPSCS* | Number of coded bits per subcarrier per spatial stream |
| *NRX* | Number of receive chains |
| *Nu* | Number of users in a transmission *Nu* = 1 for pre-VHT modulated fields for both SU and MU transmissions and for VHT modulated fields in SU transmissions. For MU transmissions, the VHT has (#601)2 <= *Nu* <= 4 depending on the number of users in the transmission. For VHT modulated fields, this value is equal to the TXVECTOR parameter NUM\_USERS. |
| *NSTS*, *NSTS,u* |  *NSTS,u* is the number of space-time streams for user *u*, *u*=0,1,2,3.For SU packets, *NSTS = NSTS,0*.For MU packets, *NSTS* is undefined. |
| *NSTS,total* | Total number of space-time streams in a packet.Note that *NSTS,total* = *NSTS* for SU packets. |
| *NSS*, *NSS,u* | *NSS,u* is the number of spatial streams for user *u*, *u*=0,1,2,3.For SU packets, *NSS=NSS,0*.For MU packets, *NSS* is undefined. |
| *NTX* | Number of transmit chains |
| *NES*, *NES,u* | *NES,u* is the number of BCC encoders for the Data field for user *u*, *u*=0, 1, 2, 3.For SU packets, *NES = NES,0*.For MU packets, *NES* is undefined. |
| *NVHTLTF* | Number of VHT long training fields (see 22.3.8.2.5 (VHT-LTF definition)) |
| *R* | Coding rate |

 **TGac editor: modify the D1.1 text from P155L47, as follows** represents the number of users in the transmission given in Table 22-4 (Frequently used parameters), and *u* is the user index starting at 0(#645).**TGac editor: modify the D1.1 text from P195L21, as follows**For MU-MIMO beamforming, the receive signal vector in subcarrier *k* at beamformee *i*, (#1630), is shown in Equation (22-88), where  denotes the transmit signal vector for  beamformees, with  being the transmit signal for beamformee *i*.(#1333)*

where***H****k,i* is the channel matrix from the beamformer to beamformee *i* in subcarrier *k* with dimensions (#457) is the number of receive antennas at beamformee *i*(#994) is the number of space-time streams (#458)transmitted to beamformee *i*  is a steering matrix for beamformee *i* in subcarrier *k*  with dimensions (#457)*Nu* is the number of MU-MIMO packet recipients. 2 <= *Nu* <= 4 depending on the number of users in the transmission (see 22.3.7 (Mathematical description of signals))***n*** is white complex Gaussian noise |
| 2403 | 136.17 | 22.3.7 | But (22-9) includes CSDs for the VHT portion of the PPDU, so this doesn't work. E.g. have two versions of 22-9, one for pre-VHT modulated, one for VHT modulated.  | As in comment | DISAGREE. See in 11/1324r0.  |
| <Discussion>CSDs for pre-VHT modulated, it is already introduced in the definition of Q matrix of the corresponding equation. FYI, for VHT modulated, CSD values for pre-VHT modulated which is included in Q matrix is set to 0 acoordingly. |