IEEE P802.11  
Wireless LANs

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| LB188 (TGac D3.0) Comment Resolution –Clause 22.3.8 | | | | |
| Date: September 18th 2012 | | | | |
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Abstract

This document provides resolutions for CID 6348, 6352, 6477, 6488, 6499, 6592, 6593, 6594, 6595, 6596, 6597, 6600, 6601, 6653, 6656, 6657, 6658 and 6784.

All of these 18 CIDS are PHY CIDs.

R1: CID 6352, 6594, 6595, 6596, 6658 and 6784 deferred. The others strawpoll passed.

R3: modified resolutions to deferred CIDs

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed change** | **Resolution** |
| 6348 | 219.44 | 22.3.8.1.1 | It is not clear whether the word "between" includes the boundary values or not. | Clarify it. | REJECT  “Between -200 and 0 inclusive” includes -200 and 0 as well. So, there is no ambiguity.  See 12/1087r1. |
| <Discussion>  “Between -200 and 0 inclusive” includes -200 and 0 as well. So, there is no ambiguity.    **TGac editor: No change** | | | | | |
| 6352 | 235.19 | 22.3.8.2.6 | As stated in P238L1, transmission signal of VHT-SIG-B field for 80+80 MHz PPDU is defied as two 80 MHz VHT formats; therefore, the definition of VHT-SIG-B bits in 80+80 MHz transmission is not needed in Figure 22-20. | Delete the caption of "80+80 MHz" from Figure 22-20.  Change the caption of "80 MHz" to "80 MHz / each segment of 80+80 MHz."  Delete "and 80+80 MHz" in P235L2.  Change "For an 80 MHz transmission" in P235L1 to "For 80 MHz transmission and each segment of 80+80 MHz transmission" | REJECT  P238L1of D3.0 is for the waveform, while figure 22-20 is for the uncoded bits SIG-B transmit flow generally follows that data field and thus current figure 22-20 is appropriate.  See 12/1087r3. |
| <Discussion>  P238L1 is for the waveform, while figure 22-20 is for the uncoded bits SIG-B transmit flow generally follows that data field and thus current figure 22-20 is appropriate.  **TGac editor: No change** | | | | | |
| 6477 | 234.00 | 22.3.8.2.6 | Since the maximum useful pre-EOF pad PSDU size is 2\*\*20-1 octets, you can't need more than 19 bits to represent this.  The rejection to CID 4703 refers to 11/609r5 as the justification for the extra two bits. However, the only justification given there is "Bigger PHY layer maximal PSDU length makes future extention easier." This is not a valid justification as (a) there is no problem extending the field in the future if there are reserved bits after it and (b) none of the other lengths have "future extension" padding | In the penultimate column of Table 22-14, change the Length field to read "B0-B18 (19)" and the Reserved field to read "B19-B22 (4)" | REJECT  The commenters suggested reduce the bit size of VHT-SIG-B length representation for SU 80/80+80/160.  But, when a similar comment was submitted in D0.1 & D2.0 comments resolution stage, TGac has already agreed that the current text is still valid even if it might be excessive a little for a case, because bigger PHY layer maximal PSDU length makes future extention easier. See 11/0609r5 (Liwen’s) and 12/0337r0.  Therefore, VHT-SIG-B length 21 bit is still necessary from the above reasonings.  See 12/1087r1. |
| <Discussion>  The commenters suggested reduce the bit size of VHT-SIG-B length representation for SU 80/80+80/160.  But, when a similar comment was submitted in D0.1 & D2.0 comments resolution stage, TGac has already agreed that the current text is still valid even if it might be excessive a little for a case, because bigger PHY layer maximal PSDU length makes future extention easier. See 11/0609r5 (Liwen’s) and 12/0337r0.  Therefore, VHT-SIG-B length 21 bit is still necessary from the above reasonings.    **TGac editor: No change** | | | | | |
| 6488 | 221.44 | 22.3.8.1.4 | The resolution to CID 5311 makes no sense. There can be no "slight error" in TXTIME as this is defined by a mathematical equation with exact inputs, not a measurement. The ceiling function in equation 22-20 is indeed quite superfluous | Replace the ceiling brackets with parenthese | REJECT  As described in 22.4.3 (TXTIME and PSDU\_LENGTH calculation), TXTIME can be calculated in unit of 4us symbol irrespective of the guard interval type applied. If a VHT data packet is transmitted with the short GI, that value is then coverted into unit of 4 us for calculation of TXTIME.  TXTIME seems to have an important role of parent parameter to others such as N\_SYM, LENGTH (in L-SIG) and PSDU\_LENGTH. So, even though TXTIME can be calculated as multiples of 4us in normal cases, it may not do any harm to introduce the ceiling operator in Eq. (22-20) of clause 22.3.8.1.4.  See 12/1087r1. |
| <Discussion>  As described in 22.4.3 (TXTIME and PSDU\_LENGTH calculation), TXTIME can be calculated in unit of 4us symbol irrespective of the guard interval type applied. If a VHT data packet is transmitted with the short GI, that value is then coverted into unit of 4 us for calculation of TXTIME.  TXTIME seems to have an important role of parent parameter to others such as N\_SYM, LENGTH (in L-SIG) and PSDU\_LENGTH. So, even though TXTIME can be calculated as multiples of 4us in normal cases, it may not do any harm to introduce the ceiling operator in Eq. (22-20) of clause 22.3.8.1.4.    **TGac editor: No change** | | | | | |
| 6499 | 234.32 | 22.3.8.2.6 | The 40 MHz MU VHT-SIG-B Length field size does not allow a PPDU duration of 5.46 ms | Add ", or slightly less for 40 MHz MU format," after the closing parenthesis in "NOTE--Varying the VHT-SIG-B Length field size ensures that a consistent maximum PPDU duration of approximately 5.46 ms (the maximum PPDU duration from the L-SIG field) is maintained across all channel widths with both SU and MU formats." | REJECT  In general, the maximum PPDU duration is typically limited within 3ms (from L-SIG value of 2340) without RTS/CTS protection. Even if we try to extend the maximum PPDU duration upto 5.46ms using kind of RTS/CTS protection, there may be only 1 exceptional case among 311 modulation cases in total, that is, in MU-MIMO, all the 4 spatial streams are transmitted to one user with 256QAM, 5/6 code rate and short GI as well, and only in 40MHz BW. Even in that exceptional case among 311 cases, it is short by just 3% of the total PPDU duration.  The current text already describes “NOTE—Varying the VHT-SIG-B Length field size ensures that a consistent maximum PPDU duration of approximately 5.46 ms (the maximum PPDU duration from the L-SIG field) is maintained across all channel widths with both SU and MU format”.  So, there seems no meaningfulness to additionally insert an explanatory description only to explicitely mention one case. See also 12/0337r0.  See 12/1087r1. |
| <Discussion>  In general, the maximum PPDU duration is typically limited within 3ms (from L-SIG value of 2340) without RTS/CTS protection. Even if we try to extend the maximum PPDU duration upto 5.46ms using kind of RTS/CTS protection, there may be only 1 exceptional case among 311 modulation cases in total, that is, in MU-MIMO, all the 4 spatial streams are transmitted to one user with 256QAM, 5/6 code rate and short GI as well, and only in 40MHz BW. Even in that exceptional case among 311 cases, it is short by just 3% of the total PPDU duration.  The current text already describes “NOTE—Varying the VHT-SIG-B Length field size ensures that a consistent maximum PPDU duration of approximately 5.46 ms (the maximum PPDU duration from the L-SIG field) is maintained across all channel widths with both SU and MU format”.  So, there seems no meaningfulness to additionally insert an explanatory description only to explicitely mention one case. See also 12/0337r0.    **TGac editor: No change** | | | | | |
| 6592 | 221.33 | 22.3.8.1.4 | To say that "L-SIG is used to communicate data rate and length information" is not accurate for VHT. | Delete this sentence | REVISE  See 12/1087r1. |
| <Discussion>  L-SIG field gives rate information which is set to 6Mbps (HT or VHT) or other values as well as length information.    **TGac editor: modify the 3.0 text from P221L32, as follows**  The L-SIG field is used to communicate rate and length information. The structure of the L-SIG field is defined in Figure 18-5 (SIGNAL field bit assignment). | | | | | |
| 6593 | 222.42 | 22.3.8.1.4 | p\_0 is defined as the "first pilot value". It should be the "first pilot polarity value". | Change "first pilot value" to "first pilot polarity value". | REJECT  It can be easily seen that “pilot value” is widely used term in the 802.11 specification.  So, there seems no need to switch to other term such as “pilot polarity value”.  See 12/1087r1. |
| <Discussion>  It can be easily seen that “pilot value” is widely used term in the 802.11 specification.  So, there seems no need to switch to other term such as “pilot polarity value”.    **TGac editor: No change** | | | | | |
| 6594 | 224.07 | 22.3.8.2.3 | The uncoded bits of VHT-SIG-A1 and VHT-SIG-A2 don't exactly corresponds to "symbols" | Change "The structure of VHT-SIG-A for the first symbol" to "The first 24 bits of VHT-SIG-A".  Change "for the second symbol" to "The second 24 bits of VHT-SIG-A". | REVISE  See 12/1087r3. |
| 6595 | 226.64 | 22.3.8.2.3 | The uncoded bits of VHT-SIG-A1 and VHT-SIG-A2 don't exactly corresponds to "symbols" | Change "symbols" to "blocks of bits" | REVISE  See 12/1087r3. |
| 6596 | 227.01 | 22.3.8.2.3 | Bits are encoded, not symbols | Change "The VHT-SIG-A symbols shall be BCC encoded ..." to "The bits of the VHT-SIG-A field shall be BCC encoded ..." | REVISE  See 12/1087r3. |
| <Discussion>  As the comment poined out, the uncoded bits of VHT-SIG-A and VHT-SIG-A2 don’t exactly correspond to symbols because splitting into two symbols is done after the BCC encoding and interleaving. There has also been the similar text change on the overview encoding process, that is, clause 22.3.4. See 12/1074r1 as well.  It seems good to refer to the similar text in the 802.11n draft. See the followings  **20.3.9.4.3 HT-SIG definition**  **(P1770L01 of TGmb 12.0)**    **(P1771L41 of TGmb 12.0)**    As seen in the above paragraph, HT-SIG is described with the use of term “parts” instead of “symbols”, which is correct before the BCC encoding. There is no expression of “symbol” within the entire subclause of HT-SIG description. It can be seen that kind of error when describing two parts of VHT-SIG-A is the one newly introduced in the VHT specifcication. HT-SIG description uses the term “part” before encoding. FYI, there is no mentioning in HT-SIG how to rotate the second symbol relative to the first symbol, which is newly introduced one in the VHT.  **TGac editor: modify the 3.0 text from P224L04, as follows**   * VHT-SIG-A definition   The VHT-SIG-A field carries information required to interpret VHT PPDUs(#4734). The structure of the VHT-SIG-A field for the first(#4245) part (VHT-SIG-A1) is shown in Figure 22-16 and for the second part (VHT-SIG-A2) is shown in Figure 22-17.   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | B0     B1 | B2 | B3 | B4    B9 | B10    B12 | B13    B15 | B16    B18 | B19    B21 | B22 | B23 | | Composite Name: | BW | Reserved | STBC | Group ID | NSTS/Partial AID | | | | TXOP\_PS\_NOT  \_ALLOWED | Reserved | | SU Name: | SU NSTS | Partial AID | | | | MU Name: | MU[0] NSTS | MU[1] NSTS | MU[2] NSTS | MU[3] NSTS | | Bits: | 2 | 1 | 1 | 6 | 3 | 3 | 3 | 3 | 1 | 1 | | * VHT-SIG-A1 structure | | | | | | | | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  | B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 B17 | B18 B23 | | Composite Name: | Short GI | Short GI NSYM  Disambiguation | SU/MU[0] Coding | LDPC Extra  OFDM Symbol | SU MCS/MU[1-3] Coding | | | | Beamformed | Reserved | CRC | Tail | | SU Name: | SU MCS | | | | Beamformed | | MU Name: | MU[1]  Coding | MU[2]  Coding | MU[3]  Coding | Reserved | Reserved | | Bits: | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 8 | 6 | | * VHT-SIG-A2 structure | | | | | | | | | | | | |   NOTE—in MU[*x*] for values listed in USER\_POSITION, *x* represents USER\_POSITION[*u*] where *u* is the user index described in Table 22-12 (Fields in the VHT-SIG-A field). Otherwise MU[*x*] NSTS sets to 0 where *x* is not listed in USER\_POSITION.(#4244)  The VHT-SIG-A field contains the fields listed inTable 22-12 (Fields in the VHT-SIG-A field).   |  |  |  |  |  | | --- | --- | --- | --- | --- | | * Fields in the VHT-SIG-A field | | | | | | Two parts of VHT-SIG-A | Bit | Field | Number of bits | Description | | VHT-SIG-A1 | B0-B1 | BW | 2 | Set to 0 for 20 MHz, 1 for 40 MHz, 2 for 80 MHz, 3 for 160 MHz and 80+80 MHz | | B2 | Reserved | 1 | Reserved. Set to 1. | | B3 | STBC | 1 | Set to 1 if all spatial streams of all users have space time block coding and set to 0 if no spatial streams of any user has space time block coding  NOTE—For some but not all users to have space time block coding is not allowed as defined in 22.3.10.9.4 (Space-time block coding)(#4086). | | B4-B9 | Group ID | 6 | Set to the value of the TXVECTOR parameter GROUP\_ID. A value of 0 or 63 indicates an SU PPDU, otherwise indicates an MU PPDU.(#4088) | | B10-B21 | NSTS/Partial AID | 12 | For an MU PPDU: NSTS is divided into 4 user positions of 3 bits each. User position *p*, where , uses bits B()-B(). The number of(#4243) space-time streams for user *u* are indicated at user position  where  and the notation A[*b*] denotes the value of array A at index *b*. Zero space-time streams are indicated at positions not listed in the USER\_POSITION array.  Set to 0 for 0 space time streams  Set to 1 for 1 space time stream  Set to 2 for 2 space time streams  Set to 3 for 3 space time streams  Set to 4 for 4 space time streams  Values 5-7 are reserved  For an SU PPDU:  B10-B12  Set to 0 for 1 space time stream  Set to 1 for 2 space time streams  Set to 2 for 3 space time streams  Set to 3 for 4 space time streams  Set to 4 for 5 space time streams  Set to 5 for 6 space time streams  Set to 6 for 7 space time streams  Set to 7 for 8 space time streams  B13-B21  Partial AID: Set to the value of the TXVECTOR parameter PARTIAL\_AID. Partial AID provides an abbreviated indication of the intended recipient(s) of the PSDU (see 9.17a (Group ID and partial AID in VHT PPDUs)). | | B22 | TXOP\_PS\_NOT\_ALLOWED | 1 | Set to 0 by VHT AP if it allows non-AP VHT STAs in TXOP power save mode to enter Doze state during a TXOP.  Set to 1 otherwise.  The bit is reserved and set to 1 in VHT PPDUs transmitted by a non-AP VHT STA. | | B23 | Reserved | 1 | Set to 1 | | **VHT-SIG-A2** | B0 | Short GI | 1 | Set to 0 if short guard interval is not used in the Data field.  Set to 1 if short guard interval is used in the Data field. | | B1 | Short GI NSYM Disambiguation | 1 | Set to 1 if short guard interval is used and *NSYM* mod 10 = 9, otherwise set to 0. *NSYM* is defined in 22.4.3 (TXTIME and PSDU\_LENGTH calculation  ). | | B2 | SU/MU[0] Coding | 1 | For an SU PPDU, B2 is set to 0 for BCC, 1 for LDPC  For an MU PPDU, if the MU[0] NSTS field is non-zero, then B2 indicates the coding used for user 0; set to 0 for BCC and 1 for LDPC. If the MU[0] NSTS field is 0, then this field is reserved and set to 1. | | B3 | LDPC Extra OFDM Symbol | 1 | Set to 1 if the LDPC PPDU encoding process (if an SU PPDU), or at least one LDPC user’s PPDU encoding process (if an MU PPDU), results in an extra OFDM symbol (or symbols) as described in 22.3.10.5.4 (LDPC coding  ) and 22.3.10.5.5 (Encoding process for MU PPDUs  ). Set to 0 otherwise. | | B4-B7 | SU MCS/MU[1-3] Coding | 4 | For an SU PPDU:  MCS index  For an MU PPDU:  If the MU[1] NSTS field is non-zero, then B4 indicates coding for user 1: set to 0 for BCC, 1 for LDPC. If NSTS for user 1 is 0, then B4 is reserved and set to 1.  If the MU[2] NSTS field is non-zero, then B5 indicates coding for user 2: set to 0 for BCC, 1 for LDPC. If the MU[2] NSTS field is 0, then B5 is reserved and set to 1.  If the MU[3] NSTS field is non-zero, then B6 indicates coding for user 3: set to 0 for BCC, 1 for LDPC. If the MU[3] NSTS field is 0, then B6 is reserved and set to 1.  B7 is reserved and set to 1 | | B8 | Beamformed | 1 | For an SU PPDU:  Set to 1 if a Beamforming steering matrix is applied to the waveform in an SU transmission as described in 20.3.11.11.2 (Spatial mapping), set to 0 otherwise.  For an MU PPDU:  Reserved and set to 1  NOTE—If equal to 1 smoothing is not recommended.(#5163) | | B9 | Reserved | 1 | Reserved and set to 1 | | B10-B17 | CRC | 8 | CRC calculated as in 20.3.9.4.4 (CRC calculation for HT-SIG) with c7 in B10. Bits 0-23 of HT-SIG1 and bits 0-9 of HT-SIG2 are replaced by bits 0-23 of VHT-SIG-A1 and bits 0-9 of VHT-SIG-A2 respectively. | | B18-B23 | Tail | 6 | Used to terminate the trellis of the convolutional decoder. Set to 0. |   NOTE—Integer fields are represented in unsigned binary format with the least significant bit in the lowest numbered bit position.  The VHT-SIG-A field is composed of two parts, VHT-SIG-A1 and VHT-SIG-A2, each containing 24 data bits, as shown in Table 22-12 (Fields in the VHT-SIG-A field). VHT-SIG-A1 is transmitted before VHT-SIG-A2. The VHT-SIG-A parts shall be BCC encoded at rate, R = 1/2, interleaved, mapped to a BPSK constellation, and have pilots inserted following the steps described in 18.3.5.6 (Convolutional encoder), 18.3.5.7 (Data interleaving), 18.3.5.8 (Subcarrier modulation mapping), and 18.3.5.9 (Pilot subcarriers), respectively. The first and second half of the stream of 96 complex numbers generated by these steps (before pilot insertion)(#5164) is divided into two groups of 48 complex numbers , where  respectively. The first 48 complex numbers form the first symbol of VHT-SIG-A and the second 48 complex numbers form the second symbol of VHT-SIG-A after rotating by 90° counter-clockwise releative to the first symbol in order to accommodate differentiation of the VHT PPDU from a BPSK modulated non-HT and HT PPDU. The time domain waveform for the VHT-SIG-A field in a VHT PPDU(#4734) shall as specified in Equation (22-24).      (#4586)where  and  are defined in 22.3.8.1.4 (L-SIG definition)    is defined in Equation (22-23)  and  are defined in 18.3.5.10 (OFDM modulation)  has the value given in Table 22-8 (Tone scaling factor and guard interval duration values for PLCP fields)  is defined in Equation (22-10), Equation (22-11), Equation (22-12) and Equation (22-13)  represents the cyclic shift for transmitter chain  with a value given in Table 22-10 (Cyclic shift values for L-STF, L-LTF, L-SIG and VHT-SIG-A fields of the PPDU)  NOTE—This definition results in a QBPSK modulation on the second symbol of VHT-SIG-A where the constellation of the data tones is rotated by 90º relative to the first symbol of VHT-SIG-A and relative to the non-HT signal field in VHT PPDUs (Figure 22-18). In VHT PPDUs, the VHT-SIG-A is transmitted with the same number of subcarriers and the same cyclic shifts as the preceding non-HT portion of the preamble. This is done to accommodate the estimation of channel parameters needed to robustly demodulate and decode the information contained in VHT-SIG-A.  For a non-contiguous 80+80 MHz transmission, each frequency segment shall use the time domain waveform for 80 MHz transmissions.   |  | | --- | |  | | * Data constellation in the VHT PPDU | | | | | | |
| 6597 | 227.08 | 22.3.8.2.3 | The constellation rortation in VHT-SIG-A is needed to distinguish non-HT frames that are coded as 6Mb/s. Others will already have been recognized during L-SIG processing. | Change "non-HT" to "non-HT sent at 6 Mb/s" | REVISE  See 12/1087r1. |
| <Discussion>  What the commenter pointed out is correct. Non-HT PPDU whose rate field is set to 6Mbps is BPSK modulated Non-HT PPDU. FYI, Non-HT PPDU whose rate field is set to 9Mbps is QPSK modulated. In HT-PPDU, see the following reference in the TGmb draft.  **9.23.4 L\_LENGTH and L\_DATARATE parameter values for HT-mixed format PPDUs**  L\_LENGTH and L\_DATARATE determine the duration that non-HT STAs do not transmit, equal to the  remaining duration of the HT PPDU or the L-SIG duration when L-SIG TXOP protection is used as defined in  9.23.5, following the non-HT portion of the preamble of the HT-mixed format PPDU.  The L\_DATARATE parameter of the TXVECTOR shall be set to the value 6 Mb/s.    **TGac editor: modify the 3.0 text from P227L07, as follows**  The BPSK constellation for VHT-SIG-A2 subfield is rotated by 90° counter-clockwise relative to  VHT-SIG-A1 subfield in order to accommodate differentiation of the VHT PPDU from a BPSK modulated non-HT and HT PPDU. | | | | | |
| 6600 | 234.38 | 22.3.8.2.6 | VHT-SIG-B length is per user | Change APEP\_LENGTH/4 to APEP\_LENGTH\_u/4 | REVISE  See 12/1087r1. |
| <Discussion>  APEP\_LENGTH is defined as a vector with a size of number of users in clause 22.2.2 TXVECTOR and RXVECTOR parameters. So, its exact expression for user *u* is APEP\_LENGTH[*u*] as seen in the following.  TGac D3.0 from P119L55 (clause 9.12.6 A-MPDU padding for VHT PPDU)  The A-MPDU\_Length[*n*] for user *n* is used as the APEP\_LENGTH[*n*] parameter value for the PLME-TXTIME.  request (see 6.5.7 (PLME-TXTIME.request)) primitive, which is then invoked once for each VHT PPDU.  The PLME-TXTIME.confirm (see 6.5.8 (PLME-TXTIME.confirm)) primitive provides the TXTIME  parameter and PSDU\_LENGTH[] parameters for all the users for the transmission.    **TGac editor: modify the 3.0 text from P234L35, as follows**  The VHT-SIG-B Length field for user *u* shall be set using Equation (22-42).  Change in Equation (22-42)   1. “VHT-SIG-B Length field” => “VHT-SIG-B Length field for user *u*” 2. “APEP\_LENGTH” => “APEP\_LENGTH [*u*]”   (22-42)  where  APEP\_LENGTH [*u*] is the TXVECTOR parameter APEP\_LENGTH for user *u* (in octets) | | | | | |
| 6601 | 235.40 | 22.3.8.2.6 | When refering to short GI, use reference to value of GI\_TYPE in TXVECTOR, rather than to field in VHT-SIG-A. | Change "value of the short GI field in VHT-SIG-A" to "value of the GI\_TYPE field in TXVECTOR" | ACCEPT  See 12/1087r1. |
| <Discussion>  EVEN the VHT-SIG-A originally refers to value of the GI\_TYPE field in the TXVECTOR when specifies its Short\_GI field.    **TGac editor: modify the 3.0 text from P235L40, as follows**  The duration of the VHT-SIG-B field is *TVHT-SIG-B*(#5441), regardless of the value of the GI\_TYPE field in the TXVECTOR. The time domain waveform for the VHT-SIG-B field in a VHT PPDU(#4734) is specified by(#4204) Equation (22-43). | | | | | |
| 6653 | 225.18 | 22.3.8.2.3 | This Note does not seem to be right:"NOTE--For some but not all users to have space time block coding is not allowed as defined in 22.3.10.9.4 (Space-time block coding)." | Please correct | REVISE  See 12/1087r1. |
| <Discussion>  What the current text tries to say is that there are only two cases in terms of number of users to which STBC applies, that is, 0 user or all users. I modified the text a little for better understanding.    **TGac editor: modify the 3.0 text from P225L15, as follows**  Set to 1 if all spatial streams of all users have space time block coding and set to 0 otherwise, see 22.3.10.9.4 (Space time block coding). | | | | | |
| 6656 | 227.59 | 22.3.8.2.3 | Mention that 90 deg rotation is ccw. | As in comment | ACCEPT  See 12/1087r1. |
| 6657 | 227.61 | 22.3.8.2.3 | Delete, not clear: "This is done to accommodate the estimation of channel parameters needed to robustly demodulate and decode the information contained in VHT-SIG-A." | As in comment | ACCEPT  See 12/1087r1. |
| <Discussion>  Modified accepting the comments.    **TGac editor: modify the 3.0 text from P227L58, as follows**  NOTE—This definition results in a QBPSK modulation on the second symbol of VHT-SIG-A where the constellation of the data tones is rotated by 90º counter-clockwise relative to the first symbol of VHT-SIG-A and relative to the non-HT signal field in VHT PPDUs (Figure 22-18). In VHT PPDUs, the VHT-SIG-A is transmitted with the same number of subcarriers and the same cyclic shifts as the preceding non-HT portion of the preamble. | | | | | |
| 6658 | 229.60 | 22.3.8.2.3 | "a single section" is not clear | Clarify | REVISE  See 12/1087r3. |
| <Discussion>  The meaning of single section here is N\_VHTLTF symbols of VHT-LTF. I think it may be better to delete the term “single section” here because there is the definition of N\_VHTLTF in the subsequent paragraph.    **TGac editor: modify the 3.0 text from P229L55, as follows**  The VHT Long Training (VHT-LTF) field provides a means for the receiver to estimate the MIMO channel between the set of constellation mapper outputs (or, if STBC is applied, the STBC encoder outputs) and the receive chains. The transmitter provides training for *NSTS,total* space time streams (spatial mapper inputs) used for the transmission of the PSDU. For each tone, the MIMO channel that can be estimated is an *NRX*  *NSTS*,total matrix. All VHT transmissions have a preamble that contains VHT-LTF symbols, where the data tones of each VHT-LTF symbol are multiplied by entries belonging to a matrix *PVHTLTF*, to enable channel estimation at the receiver. | | | | | |
| 6784 | 224.40 | 22.3.8.2.3 | What does "NSTS sets to 0 where x is" mean? | Replace "NSTS sets to 0 where x is" with "NSTS is 0 when x is". | REVISE  By the resolution to CID#6390 (in 12/1007r4), this note is already deleted.  See 12/1087r3. |
| <Discussion>  Bit positions of array values of N\_STS may not be mapped in the exactly increasing order of *u*, because user index *u* may not match to USER\_POSITION array value *p*, whose relation between each other is already described in Table 22-11, that is, *p*=USER\_POSITION[*u*]. For your more information, see 12/0336r2 (resolution to CID 4244) as well.  It needs to refer to the previous resolution to CID#6390 done in Doc. 12/1007r4 (by Adrian)  The referred NOTE seems to be outdated (better definitions can be found in Table 22-12 of Draft 3.0) and incomplete (the MU[x] coding field isn’t described). It seems better to delete the note and instead refer to table 22-12.  By the resolution to CID#6390, this note is already deleted.  **TGac editor: No change** | | | | | |