IEEE P802.11
Wireless LANs

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| Clause 22.2.2 TXVECTOR and RXVECTOR Parameters D2.0 Comments Resolution |
| Date: 15 Jul 2012 |
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Abstract

This document provides resolutions for following CIDs: 6177, 6372, 6403, 6449 and 6450.

**Comments:**

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 6177 | 188.22 | 22.2.2 | The Editorial Note states that the statement 'number of space-time streams ... 1-4 per user for MU' is incorrect, and that it should be '0-4 per user'. However, Note that NUM\_STS is an 'MU' parameter which is an array of NUM\_USERS elements (P190L46). Thus, if an MU transmission has one of the Nsts = 0, then NUM\_USERS = 3, thus NUM\_STS will have only three elements, corresponding to those users with N\_STS >= 1. Hence, the current draft is correct. | Delete the Editorial Note. | Revised. Suggest TGac editor to accept the proposed modification as below the discussion of CID6177/6372/6403/6450 in document 11-12/0918r0  |
| 6372 | 188.48 | 22.2.2 | I agree that NUM\_STS range for MU is incorrect. Please modifiy back to 0 - 4. | Change range for MU to 0 to 4. | Revised. Suggest TGac editor to accept the proposed modification as below the discussion of CID6177/6372/6403/6450 in document 11-12/0918r0 |
| 6403 | 188.47 | 22.2.2 | The editor's note is correct. For a MU receiver, the range of NUM\_STS could be among 0 to 4. | Change to "1-8 for SU, 0-4 per user for MU" | Revised. Suggest TGac editor to accept the proposed modification as below the discussion of CID6177/6372/6403/6450 in document 11-12/0918r0 |
| 6450 | 188.48 | 22.2.2 | Yup, it's fine to have NUM\_STS being 0 for some but not all of the users in MU | Change to "0-4 per user for MU" | Revised. Suggest TGac editor to accept the proposed modification as below the discussion of CID6177/6372/6403/6450 in document 11-12/0918r0 |

**Discussion:**

Within TXVECTOR, the NUM\_STS is used to set the MU[X] NUM\_STS sub-field in SIG-A, where x= USER\_POSITION[p], 0*≤p≤NUM\_USER-1*. If x is not listed in USER\_POSITION[p] (0*≤p≤NUM\_USER-1*), MU[x] NUM\_STS sub-field will set to zero. So from transmitter point of view, the NUM\_USER parameter in TXVECTER is not allowed to set to 0 for a MU PPDU transmission.

While in the MU-MIMO receiver point of view, the NUM\_STS could be zero for the receiver to understand that there’s no stream for it in the received MU-MIMO PPDU, as stated in line1/page151,

“*If the AP allows non-AP VHT STAs to enter Doze state during a TXOP, then a non-AP VHT STA that is in*

*VHT TXOP power save mode may enter the Doze state till the end of that TXOP when one of the following conditions exists:*

*….*

* *The STA receives a frame with an RXVECTOR parameter NUM\_STS equal to 0, if it is a member of group indicated by RXVECTOR GROUP\_ID.*

”

Relatively, following descriptions imply the NUM\_STS could be zero for transmitter but they are actually not appropriate description.

**Clause 8.4.2.160.2 VHT Capabilities info field**.

 --------Line31/page80------------

“*NOTE 1—An AP that sets MU Beamformer Capable to 1 can transmit a VHT MU PPDU with only one non-zero TXVECTOR parameter NUM\_STS[p], for 0≤p≤3 . However, a STA that sets MU Beamformee Capable to 0 is not required to be able to demodulate a VHT MU PPDU with only one non-zero RXVECTOR parameter NUM\_STS[p], for 0≤p≤3*”

***9.29.4 VHT MU Beamforming***

*A VHT MU Beamformer may transmit a VHT MU PPDU with a single non-zero TXVECTOR parameter*

*NUM\_STS[p], where 0≤p≤3.*

*A VHT MU Beamformer shall not transmit a VHT MU PPDU with a non-zero TXVECTOR parameter*

*NUM\_STS[p], where 0≤p≤3, to a STA whose MU Beamformee Capable field is equal to 0.*

Besides, there’s one contradict description in the spec as following:

**22.6.4.4 PMD\_SAP service primitive parameters**

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Table 22-64—List of parameters for PMD primitives

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|  |  |  |
| --- | --- | --- |
| Parameter | Associated primitive | Value |
| … | … | … |
| NUM\_STS | PMD\_TX\_PARAMETERS.request | Indicates the number of space-time streamsRange 1-8 for SU, 0-4 for MU. See NOTE |
| … | … | … |

**Suggested Modification:**

**TGac editor: please modify the text at line 49/page188 in Table 22-1 as following, and remove the EDITORIAL NOTE in line50/page188.**

“Integer: range 1-8 for SU, 1-4 per user in TXVECTOR and 0-4 in RXVECTOR for MU.”

**TGac editor: please modify the text at line29/page310 in Table 22-64 as following.**

Table 22-64—List of parameters for PMD primitives

|  |  |  |
| --- | --- | --- |
| Parameter | Associated primitive | Value |
| … | … | … |
| NUM\_STS | PMD\_TX\_PARAMETERS.request | Indicates the number of space-time streamsRange 1-8 for SU, ~~0~~1-4 for MU. See NOTE |
| … | … | … |

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| **CID** | **Page** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 6449 | 188.49 | 22.2.2 | A TXVECTOR with NUM\_STS of 0 is not terribly useful | Change to "is between 1 and 8 inclusive" | Agree. |

**Discussion:**

This sentence is setting a rule for the value range of NUM\_STS summed over all users, from transmitter point of view, or from one of the receiver point of view if it sums all NTS\_NUM subfields in SIG-A. The commenter is correct that a zero summed NUM\_STS makes no sense.