IEEE P802.11
Wireless LANs

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| Comment resolutions for 27.15.4 |
| Date: 2018-01-05 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  |  |
| Abhishek Patil | Qualcomm Inc. |  |  |  |

Abstract

This submission proposes resolutions for multiple comments related to TGax D2.0 with the following CIDs:

* 11262, 11693 (2 CIDs)

Revisions:

* Rev 0: Initial version of the document.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 11262 | Alfred Asterjadhi | 318.11 | Instead of an example it would be good to provide the full list of what is used and not used depending on these RX bitmask setting. Otherwise it is difficult for a person not familiar with the encoding to understand what is going on and may be prone to errors. | As in comment. | Revised –Agree in principle with the comment. The issue is that having a list of rules and a table for examples might create inconsistencies which is the case this time. The presence of parenthesis for the >40 MHz PPDU case leads to encoding errors. These inconsistencies were inherited by 11ac rules. The proposed resolution fixes this inconsistency for the 11ax amendment but also for the 11ac amendment as well. In addition, to keep consistency between the two amendments and also to ensure backwards compatibility with APs that do not support unequal HT modulation (signaled by bits 32 onwards of the bitmask) but that wants to allow the use of the low MSCs for the NSSs greater than 4 the proposal also limits the NSS that is used for the computation of the minimum MCSs to up to 4 from up to 8 that was in the previous version of the draft.TGax editor to make the changes shown in 11-18/0014r0 under all headings that include CID 11262. |
| 11693 | Duncan Ho | 317.45 | NSTS field of OM control field has some impact here. | Specify that the reception of the OM Control field controls the NSS in Tx o f the STA as well, according to the instructions provided in the TX NSTS field of the OM Control field received from the STA. | Revised –Agree in principle with the comment. Proposed resolution adds a clarification that points to the normative behavior in TOM operation that defines these additional rules.TGax editor to make the changes shown in 11-18/0014r0 under all headings that include CID 11693. |

**Discussion: *None.***

* Rate selection constraints for HE STAs
* Tx Supported HE-MCS and NSS Set

The Tx supported HE-MCS and NSS set(#Ed) of a first HE STA is determined by a second STA for each <HE-MCS, NSS> tuple NSS = 1, …, 8 and bandwidth ( 80 MHz, and 160 MHz or 80+80 MHz) from the Supported HE-MCS And NSS Set field received from the first STA as follows:

* If support for the <HE-MCS, NSS> tuple at that bandwidth is mandatory (see 28.5 (Parameters for HE-MCSs)), then the <HE-MCS, NSS> tuple at that bandwidth is supported by the first STA on transmit.
* Otherwise, if the Max HE-MCS For *n* SS subfield (*n* = NSS) in each Tx HE-MCS Map For *b* subfield for *b*  { 80 MHz, 160 MHz, 80+80 MHz} indicates support, then the <HE-MCS, NSS> tuple at that bandwidth is supported by the first STA on transmit as defined in 9.4.2.237.4 (Supported HE-MCS And NSS Set field).(#4769)
* Otherwise, the <HE-MCS, NSS> tuple at that bandwidth is not supported by the first STA on transmit.

**TGax Editor: *Insert a new paragraph in this subclause as follows (#CID 11693):***

A non-AP STA may exclude certain number of space time streams, *NSTS*, as defined in 27.8.3 (Rules for transmit operating mode (TOM) indication) from its Tx supported HE-MCS and NSS set(#Ed).*(#11693)*

* Additional rate selection constraints for HE PPDUs

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11262):***

The following apply for a STA that transmits an HE PPDU with a number of spatial streams (NSS) less than or equal to 4:

* If the channel width of the PPDU is equal to CBW20 or CBW40, then the STA shall(#4925, #7591, #7592) not use a <HE-MCS, NSS> tuple if the HE-MCS is equal to 0, 1, 2, or 3 and the HT MCS with value HE MCS + 8 (NSS – 1) is marked as unsupported in the Rx MCS Bitmask field of the HT Capabilities element of the receiver STA. <HE-MCS, NSS> tuples with HE-MCS greater than 3 are not subject to such restrictions when the PPDU is equal to CBW20 or CBW40.
* If the channel width of the PPDU is equal to CBW80, CBW160, or CBW80+80, then the STA shall(#4925, #7591, #7592) not use a <HE-MCS, NSS> tuple if the HE-MCS is equal to 0 or 1 and both the HT MCS values 2 HE-MCS + 8(NSS – 1) and 2 HE-MCS + 1 + 8 (NSS – 1) are marked as unsupported in the Rx MCS Bitmask field of the HT Capabilities element of the receiver STA. <HE-MCS, NSS> tuples with HE-MCS greater than 1 are not subject to such restrictions when the PPDU is equal to CBW80, CBW160, or CBW80+80.*(#11262)*

An example tabulation of this behavior is given in Table 27-9 (Example of rate selection for HE PPDUs).

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| HT MCSs that are marked as unsupported | <HE-MCS, NSS> tuples that are not used for CBW20 and CBW40 | <HE-MCS, NSS> tuples that are not used for CBW80, CBW160, and CBW80+80 |
| 0, 8, 16 | <0, 1>, <0, 2>, <0, 3> | - |
| 1, 9 | <1, 1>, <1, 2> | - |
| 10 | <2, 2> | - |
| 3 | <3, 1> | - |
| 0, 1 | <0, 1>, <1, 1> | <0, 1> |
| 2, 3 | <2, 1>, <3, 1> | <1, 1> |
| 0, 1, 8, 9 | <0, 1>, <1, 1>, <0, 2>, <1, 2> | <0, 1>, <0, 2> |

* + - 1. **Additional rate selection constraints for VHT PPDUs**

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 11262):***

The following apply for a STA that transmits a VHT PPDU with a number of spatial streams (NSS) less than or equal to 4:

* If the channel width of the PPDU is equal to CBW20 or CBW40, then the STA should not use a <VHT-MCS, NSS> tuple if the VHT-MCS is equal to 0, 1, 2, or 3 and the HT MCS with value VHT-MCS + 8(NSS – 1) is marked as unsupported in the Rx MCS Bitmask field of the HT Capabilities element of the receiver STA. <VHT-MCS, NSS> tuples with VHT-MCS greater than 3 are not subject to such restrictions when the PPDU is equal to CBW20 or CBW40.
* If the channel width of the PPDU is equal to CBW80, CBW160, or CBW80+80, then the STA should not use a <VHT-MCS, NSS> tuple if the VHT-MCS is equal to 0 or 1 and both the HT MCS values 2 VHT-MCS + 8(NSS – 1) and 2 VHT-MCS + 1 + 8 (NSS – 1) are marked as unsupported in the Rx MCS Bitmask field of the HT Capabilities element of the receiver STA. <VHT-MCS, NSS> tuples with VHT-MCS greater than 1 are not subject to such restrictions when the PPDU is equal to CBW80, CBW160, or CBW80+80.*(#11262)*