IEEE P802.11
Wireless LANs

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| Comment resolutions for additional rules for preassociation |
| Date: 2019-06-01 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D4.0 with the following CIDs (4 CIDs):

* 20128, 21297, 21300, 21523

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Contains changes deriving from the discussions during the ad-hoc meeting, and feedback received off-line from Mark. The changes address language for the two deferred CIDs 20072, and 21300. Also added resolution for CID 20373 in this document as per suggestion. Changes highlighted in this color.
* Rev 2: Some minor suggestion received. Changes highlighted in this color.
* Rev 3: Incorporated additional feedback received during the second presentation. Removed changes for CIDs 20072, 21522, and 20373 as they will be resolved later.

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** |
| 20128 | Alfred Asterjadhi | 424.54 | The first sentence of this paragraph is similar to the sentences in 26.17.2.3.2. Suggest removing duplication (perhaps best to keep these rules here). Also the following two paragraphs apply to "any PPDU that is not HE TB PPDU". Please refer to 11-19/0097r3. | As in comment. | Revised –Agree in principle with the comment. Proposed resolution incorporates the changes as motioned in document 11-19/0097r3, while exempting PPDUs sent in response to Trigger frame from the minimum rate rules, since they have their own MCS rules dictated by AP in the Trigger frame, and moves the paragraph that is related to the PPDUs sent after association and follow the minimum rate field, since their current subclause is related to HE PPDU only and not for non-HT PPDUs. This subclause instead is more appropriate since it covers additional rules for 6 GHz band. The rules for inclusion of group addressed frames (including FD and PRs) are added as a separate subclause, inline with the suggestion.TGax editor to make the changes shown in 11-19/0964r3 under all headings that include CID 20128. |
| 21297 | Robert Stacey | 424.51 | "pre-association" is not used in the baseline and not defined in 11ax. | Move this subclause to 26.17 (HE BSS operation) and rename "Synchronization in the 6 GHz band" | Revised –Agree in principle with the comment. Since these rules are relevant to the selection of the BW, NSS, MCS of the PPDU for the 6 GHz band, proposed resolution is to keep the subclause under the same hierarchy but rename it more appropriately without using the term “pre-association”. TGax editor to make the changes shown in 11-19/0964r3 under all headings that include CID 21297. |
| 21300 | Robert Stacey | 424.59 | An S-MPDU is an MPDU is a frame so a frame cannot be carried in an S-MPDU. There is not need for a specific rule that FILS Discovery and Probe Response frames be sent as S-MPDUs. Presumably all Management frames sent to an unassociated STA would be sent as S-MPDUs (Association Response, etc.). Also, what about frames sent to the AP? We should have a general rule that a Management frame addressed to an unassociated STA or sent by an unassociated STA be sent as an S-MPDU. | Change to: "A Class 1 frame that is sent in an HE PPDU shall be sent as an S-MPDU. " | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change, although this general rule is inserted in the general subclause of A-MPDU operation and added descriptive references to this general subclause from the two subclauses of interest. Also please note that the same applies for Class 2 frames as well. Accounted for this in the resolution as well.TGax editor to make the changes shown in 11-19/0964r3 under all headings that include CID 21300. |
| 21523 | Yongho Seok | 425.18 | "An HE STA that transmits an HE PPDU that is not an HE TB PPDU in the 6 GHz band and that contains a frame with the Address 1 field or the Address 3 field set to the MAC address of an AP with which it is not associated shall determine..."Why not all PPDU format? e.g., non-HT PPDU. | As in comment. | Revised –Agree with the comment. Proposed resolution accounts for the suggested change, inline with the motioned text in 11-19/0097r3, although specifying that in the non-HT PPDU case the rates are less to chose from (up to 54 Mbps), hence the exception. In addition, the proposed resolution removes an ambiguous sentence in subclause 26.15.2 since the cases of HE PPDUs containing control frames are explicitly listed in the rest of that subclause.TGax editor to make the changes shown in 11-19/0964r3 under all headings that include CID 21523. |

**Discussion: *None.***

**TGax Editor: *Change the heading below of this subclause as follows (#CID 21297):***

* Additional rules for PPDUs sent in the 6 GHz band*(#21297)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21300, 20128):***

An HE STA that transmits aPPDU that is not sent in response to a Trigger frame in the 6 GHz band*(#20128)* and that contains a frame with the Address 1 field or the Address 3 field set to the MAC address of an HE AP with which it is not associated and from which it has received a FILS Discovery frame or an HE Operation element shall ensure that the PPDU*(#20128)* meets the following conditions:

* The bandwidth of the PPDU*(#20128)* is less than or equal to the operating bandwidth of the HE BSS as indicated in the BSS Operating Channel Width subfield of the FILS Discovery frame or in the Channel Width subfield of the HE Operation element sent by the AP
* The PPDU*(#20128)* is transmitted with a number of spatial streams that is less than or equal to the maximum number of spatial streams of the HE BSS as indicated in the Maximum Number of Spatial Stream subfield of the FILS Discovery frame or in the Basic HE-MCS and NSS Set field of the HE Operation element sent by the AP
* If the PPDU is an HE PPDU then the PPDU is transmitted with an <HE-MCS, NSS> tuple providing a data rate that is greater than or equal to the minimum rate indicated in the FILS Minimum Rate field (if present) of the FILS Discovery frame or in the Minimum Rate field of the HE Operation element sent by the AP
* If the PPDU is a non-HT PPDU then the PPDU is transmitted with a data rate that is greater than or equal to the minimum of <*R*, 54 Mb/s>, where *R* is the minimum rate indicated in the FILS Minimum Rate field (if present) of the FILS Discovery frame or in the Minimum Rate field of the HE Operation element sent by the AP*(#20128, 21300)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 20128):***

An HE STA that transmits a PPDU that is not sent in response to a Trigger frame in the 6 GHz band and that contains a frame with Address 1 field or Address 3 field set to the MAC address of the AP to which it is associated shall ensure that the PPDU meets the following conditions:

* If the PPDU is a non-HT (duplicate) PPDU then the PPDU is transmitted with a data rate that is greater than or equal to the minimum of <*R*, 54 Mb/s>, where *R* is the minimum rate indicated in the Minimum Rate field of the HE Operation element sent by the AP.
* If the PPDU is an HE PPDU then the PPDU is transmitted with an <HE-MCS, NSS> tuple providing a data rate that is not less than the data rate indicated in the Minimum Rate field of the HE Operation element sent by the AP.*(#20128)*

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21523, 21300, 20128):***

An HE STA that transmits a PPDU that is not an HE TB PPDU in the 6 GHz band *(#21523, 20128)* and that contains a frame with the Address 1 field or the Address 3 field set to the MAC address of an AP with which it is not associated shall determine a local maximum transmit power for that transmission following the rules in 11.7.5 (Specification of regulatory and local maximum transmit power levels), if the local maximum transmit power is received in Transmit Power Envelope elements and combinations of Country elements and Power Constraint elements in the most recently received Beacon or Probe Response frame, on the channel from that AP.*(#21300, 20072)*

* Additional rate selection constraints for HE PPDUs

A STA shall not transmit a 20 MHz or 40 MHz HE PPDU with an <HE-MCS, NSS> tuple that has HE-MCS 0, 1, 2 or 3 and NSS less than or equal to 4 to a receiver STA that has marked as unsupported the HT MCS with value HE-MCS + 8 ×(NSS – 1) in the Rx MCS Bitmask subfield in the Supported MCS Set field in the HT Capabilities element it transmits. The transmission of a 20 MHz or 40 MHz HE PPDU with HE-MCS greater than 3 is not subject to this constraint.

A STA shall not transmit an 80 MHz, 160 MHz or 80+80 MHz HE PPDU with an <HE-MCS, NSS> tuple that has HE-MCS 0 or 1 and NSS less than or equal to 4 to a receiver STA that has marked as unsupported the HT MCS values of both 2× HE-MCS + 8×(NSS – 1) and 2 ×HE-MCS + 1 + 8× (NSS – 1) in the Rx MCS Bitmask subfield in the Supported MCS Set field in the HT Capabilities element it transmits. The transmission of an 80 MHz, 160 MHz or 80+80 MHz HE PPDU with HE-MCS greater than 1 is not subject to this constraint.

An example tabulation of this behavior is given in Table 26-13 (Example of rate selection for HE PPDUs).

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| * 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> |

**TGax Editor: *Delete the paragraph below of this subclause as follows (#CID 20128):***

*(#20128)*

**26.6.1 General**

A-MPDU operation for an HE PPDU follows the procedures defined in 10.13 (A-MPDU operation) and, additionally, the procedures defined in this subclause.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 21300):***

An HE STA that sends a Class 1 frame or a Class 2 frame in an HE PPDU shall send the frame as an S-MPDU (see Table 9-532 (A-MPDU contents in the S-MPDU context)).*(#21300)*

An HE STA that sends a VHT Capabilities element or an HT Capabilities element and an HE Capabilities element with Maximum A-MPDU Length Exponent Extension field of 0 shall support in reception an AMPDU pre-EOF padding with maximum length defined in 10.13.2 (A-MPDU length limit rules).

**9.4.2.243 HE Operation element**

The Minimum Rate field indicates the minimum rate with NSS no more than 3 and HE-MCS no more than 3 that is allowed for a STA to use in unit of 1 Mb/s.

**26.15.2 PPDU format selection**

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 21523):***

An HE STA that transmits non-HT, HT, or VHT PPDUs shall follow the rules in 10.6 (Multirate support). An HE STA may transmit an HE SU PPDU to a peer HE STA subject to the restrictions defined below.*(#21523)*