IEEE P802.11
Wireless LANs

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| Comment Resolution on PHY Introduction Part - 2 |
| Date: 2018-09-08 |
| Author(s): |
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Abstract

This submission shows

* Resolution for a comment received from TGax comment collection (TGax Draft D3.0)
* The proposed changes are based on 11ax D3.0.

The submission provides resolutions to comments related to HE PHY Capabilities (9.4.2.237.3).

* The submission provides resolutions to 9 CIDs:
16178, 16185, 16238, 16239, 16240

16316, 16593, 16922, 17144

Revisions:

* Rev 0: Initial version of the document.

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16178 | 154.46 | The resolution to CID 12798 "Sending an UL MU PPDU has no value" was "Agree in principle. All references have been removed with resolutions to other comments. No further change required." However, there do in fact remain various references to sending UL MU PPDUs | Make Rx HE MU PPDUFrom Non-AP STA, Rx Full BW SUUsing HE MUPPDU With Com-pressed SIGB and Rx Full BW SUUsing HE MUPPDU With Non-Compressed SIGB only apply to rx by a non-AP STA | Reject—The resolution to CID12798 on D2.0 is “Reject” in document 685r0. The motion number 600 in May 2018 reflects it.The reject reason is copied from 685r0.“UL MU PPDU contains SIG-B field which contains the transmit identifier, or the receive identifier (depending if intended to an AP or a non-AP STA). This information contained in the PHY preamble is beneficial for the receiver to determine the transmitter or if it is the receiver of the PPDU even if all the PSDU is received incorrectly and can be used for fast recovery procedures at the MAC layer” |

***Discussion***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16185 | 161.37 | It's not just 160 MHz OFDMA. The resolution to CID 12814 claims this is about the PPDU bandwidth, but this is not clear | Change "160 MHz" to "160/80+80 MHz" at the referenced location | Reject—160/80+80 MHz refers to HE PPDU bandwidth. In both cases, the field indicates 160 MHz OFDMA support |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16238 | 159.6 | There is no normative behaviour associated with the SU Beamformee field | Add at the end of 27.6.2 (or in 27.6.3?) wording like "A STA shall not request non-trigger-based SU-type feedback from another STA unless it has received from that STA an HE PHY Capabilities Indication field with the SU Beamformee subfield equal to 1." | Reject—The spec. describes on P:L::303:50, the definition of SU beamfomee (a STA with SU Beamformee = 1). Then on P:L::304:33, behaviour of SU beamformee is described. |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***In Section 27.6.2 (Sounding sequences and support) there exists a definition of “SU beamformee” on P:L::303:50***

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***Then, the behaviour of SU beamformee is described P:L::304:33***

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***The normative behaviour for “SU Beamformee” capability is described through above.***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16239 | 158.54 | There is no normative behaviour associated with the SU Beamformer field | Add at the end of 27.6.2 (or in 27.6.3?) wording like "A STA shall not request SU-type feedback unless it has transmitted an HE PHY Capabilities Indication field with the SU Beamformer subfield equal to 1." | Reject—The spec. describes on P:L::303:47, the definition of SU beamfomer (a STA with SU Beamformer = 1). Then on P:L::304:33, behaviour of SU beamformer is described. |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***In Section 27.6.2 (Sounding sequences and support) there exists a definition of “SU beamformer” on P:L::303:47***

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***Then, the behaviour of SU beamformee is described P:L::304:33***

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***The normative behaviour for “SU Beamformer” capability is described through above.***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16240 | 159.11 | There is no normative behaviour associated with the MU Beamformer field | Add at the end of 27.6.2 (or in 27.6.3?) wording like "A STA shall not request MU-type or CQI feedback unless it has transmitted an HE PHY Capabilities Indication field with the MU Beamformer subfield equal to 1." | Reject—The spec. describes on P:L::303:55, the definition of MU beamfomer (a STA with MU Beamformer = 1). Then on P:L::304:42, behaviour of MU beamformer is described. |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***In Section 27.6.2 (Sounding sequences and support) there exists a definition of “MU beamformer” on P:L::303:55***

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***Then, the behaviour of MU beamformee is described P:L::304:42***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16316 | 157.26 | There is no normative behaviour associated with the LDPC Coding In Payload bit | Add something in Clause 28 to say that a STA shall not transmit using LDPC coding in an HE PPDU if it has not received from the peer STA(s) an HE PHY Caps with LDPC Coding equal to 1 | Revised—Normative behaviour is missing. The resolution is to add the behaviour.TGax Editor: make changes for CID 16316 according to 11-18-1460-00-00ax |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***Section 10.15 (LDPC operation) in REVmdD1.0, describes FEC\_CODING setting permissible for transmitting frames to a STA.***

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***HE behaviour is to be added to this section.***

***Furthermore, 28.3.11.5 (Coding) in 11ax D3.0 requires slight improvement.***

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***To TGax editor***: Create a section 10.15 (LDPC operation) in 11ax D3.0 corresponding to section 10.15( LDPC Operation REVmd\_D1.0). Add the following text to the new section

***10.15 LDPC Operation (CID16316)***

An HE STA shall not transmit a frame with the TXVECTOR parameter FORMAT set to HE\_SU, HE\_ER\_SU, HE\_MU, and HE\_TB and the TXVECTOR parameter FEC\_CODING set to LDPC\_CODING unless the RA of the frame corresponds to an HE STA for which the LDPC Coding In Payload subfield of the HE Capabilities element received from that STA contained a value of 1 and dot11HELPDCCodingInPayloadActivated is true.

**28.3.11.5 Coding**

LDPC is the only FEC coding scheme in the HE PPDU Data field for a 484-, 996-, and 2996-tone RU. LDPC is the only FEC coding scheme in the HE PPDU Data field for HE-MCSs 10 and 11 in a 242- 484-, 996- and 2996-tone RU. Support of BCC code is limited to less than or equal to four spatial streams and MCS 0 to MCS 9 (per user in case of MU-MIMO), and is mandatory (for both transmit and receive) for RU sizes less than or equal to a 242-tone RU. LDPC Coding In Payload subfield of the HE Capabilities element indicates support for the transmission and reception of the LDPC encoded packets. (CID16316) Support of LDPC code (for both transmit and receive) is mandatory for HE STAs declaring support for at least one of HE 40/80/160/80+80 SU PPDU bandwidths, for HE STAs declaring support for more than 4 spatial streams, or for HE STAs declaring support for HE-MCSs 10 and 11, according to LDPC Coding In Payload subfield of the HE Capabilities element as defined in 9.4.2.237 (HE Capabilities element). Other-wise, support of LDPC code for either transmit or receive is optional.

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16593 | 156.25 | The channel width set field in HE PHY capabilities field creates confusion. For an AP, the channel width support is part of the BSS bandwidth indication, which is already described by 11.40. As a result, this additional field for AP may create conflict with the existing indication in 11.40. | This field shall not be applied for an HE AP, which may create conflict for existing indication. | Reject—Each device regardless of being an AP or client shall advertise the BWs it supports. This is achieved through Channel Width Set subfield.The comment does not identify any case where there exists discrepancy. |

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16922 | 162.50 | "20 MHz only STA shall set to 0." It has "shall" and the correct terminology defined in 3.2 is 20 MHz-only non-AP HE STA. | Change it to "Set to 0 for 20 MHz-only non-AP HE STAs." | Revised—There is a need for language improvement.TGax Editor: make changes for CID 16922 according to 11-18-1460-00-00ax |

***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***A “shall” in the Table is not appropriate.***

***------------- Begin Text Changes ---------------***

***To TGax editor: Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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| ***Longer Than 16 HE SIG-B OFDM Symbols Support*** | ***…*** | ***Set to 0 if not supported.******Set to 1 if supported.******~~20 MHz only STA shall set to 0.~~******NOTE—Set to 0 by a 20 MHz-only non-AP HE STA. (CID16922)*** |

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 17144 | 161 | "80 MHz In 160/80+80 MHz HEPPDU" this capability allows a 80MHz HE STA to supports 160 MHz OFDMA. However how the PPDU is constructed is not clear. How the BW of the PPDU is set? 80 or 160? All these details need to be clarified. | as in the comment | Reject—Section 28.3.2.9 describes the behavior for STAs that indicate support of 80MHz In 160/80+80MHz HE PPDU. The key points are as follows* Incoming waveform is 160MHz PPDU, i.e., BW in HE-SIG-A = 160 MHz. This is evident from the term “160 MHz or 80+80MHz HE MU PPDU …” in the section.
* RU to ‘this’ STA allocated within primary 80 MHz
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***Discussion***

***Table 9-262aa Subfields of the HE PHY Capabilities Information field***

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***Section 28.3.2.9 (80 MHz Operating non-AP HE STA) describes the operation of a non-AP HE STA capable of up to 80 MHz channel width, when operating with 80 MHz channel width in 160/80+80 MHz HE PPDU.***

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