IEEE P802.11
Wireless LANs

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| Comment Resolution on PHY Introduction |
| Date: 2018-11-08 |
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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 14 CIDs:
15660, 16259, 16314, 16315, 16341,

16522, 16524, 16726, 16725, 16772,

16774, 16776, 16777, 16964

Revisions:

* Rev 0: Initial version of the document.

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 15660 | 162.27 | "...DCM Max BW subfield indicates themaximum bandwidth...", is this an indication of maximum packet bandwidth or maximum RU size, for example when setting this field to 0 (20MHz), does the device support Rx/Tx an RU106 in an OFDMA packet of total BW=80MHz? | Change the defintion of this field to maximum RU size, or add notes to explain the real meaning. | RevisedChange this capability to be based on RU size instead of PPDU bandwidthTgax Editor: make changes for CID 15660 according to 11-18-1841-01-00ax |

***Discussion***

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

***To TGax editor: Please do a global search and replace “DCM Max BW” to “DCM Max RU”***

***To TGax editor:*** *Please make the redline change below on 9.4.2.241.3 P.L 169.47 of D3.2 for CID 15660*

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| DCM Max RU (#11904) | If the DCM Max Constellation Tx subfield is greater than 0, then the DCM Max RU subfield indicates the maximum RU size ~~bandwidth~~ that the STA might transmit with DCM applied.If the DCM Max Constellation Rx subfield is greater than 0, then the DCM Max RU subfield indicates the maximum RU size with DCM applied that the STA can receive.If both the DCM Max Constellation Tx subfield and DCM Max Constellation Rx subfield are 0, then this subfield is reserved. | Set to 0 for 242-tone RU Set to 1 for 484-tone RU Set to 2 for 996-tone RU Set to 3 for 2x996-tone RU  |

***To TGax editor:*** *Please make the redline change below on 27.15.3 P.L 382.53 of D3.2 for CID 15660*

An HE STA may transmit an HE PPDU with DCM to a recipient STA if it has received from the recipient STA an HE Capabilities element with the DCM Max Constellation Rx subfield in the HE PHY Capabilities Information field greater than 0; otherwise the HE STA shall not transmit an HE PPDU with DCM to the recipient STA. The RU size with DCM that an HE STA transmits to a recipient STA shall be equal to or less than the max RU size indicated by the DCM Max RU subfield in the HE PHY Capabilities Information field in the HE Capabilities element received from the recipient STA.

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16259 | 377.06 | 28.1.1 Introduction to the HE PHY seems to be not just an intro but also a list of requirements, some of which don't appear to be specified elsewhere in the clause | Move the normative requirements into a new Subclause 28.1.1b, and keep only general introductory material in 28.1.1 | Reject—Traditionally the PHY requirements are put into introduction subclause: for example, Clause 21.1.1 (VHT) also lists the mandatory /optional features of VHT  |

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| CID | P.L | Comment | Proposed Change | Resolution |
| 16314 | 380.14 | “A non-AP HE STA shall support the following features: […] A 20 MHz-only non-AP HE STA shall support” is broken. But where is the requirement for a normal non-AP HE STA? | Delete the “A 20 MHz-only non-AP HE STA shall support” and say “(20 MHz-only STA only)” after | Revised—There are two comments:First, where is RU size support requirement for non-AP STA? The answer is the bullet above P.L 380.39 (D3.0).Second, an editorial improvement to text, which is being addressed.Tgax Editor: make changes for CID 16314 according to 11-18-1841-01-00ax |
| 16315 | 380.14 | "A non-AP HE STA shall support the following features: [...] A 20 MHz-only non-AP HE STA shall support" -- where is the requirement for this item for a normal non-AP HE STA? | Delete the "A 20 MHz-only non-AP HE STA shall support" | Revised –This cid is copy of CID16314. Please refer to resolution of CID16314. |
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***Discussion***

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***To TGax editor:***  *Make the following redline change on P.L 380.44*

* For a (16314) ~~A~~ 20 MHz operating non-AP HE STA, it shall support …..

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16341 | 379.01 | "HE SU PPDUs with 0.8 us GI duration on both the HE-LTF and Data field symbols when the HE-LTF is a 1x LTF (transmit and receive)." -- also for ER PPDUs, per Table 28-28 | Add "and HE ER PPDUs" after "HE SU PPDUs" | Revised—The ER SU PPDU mention is indeed missed.TGax Editor: make changes for CID 16341 according to 11-18-1841-01-00ax |

***Discussion***

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***To TGax editor:*** *Please make the redline change below on P.L 379.01*

* HE SU PPDUs and HE ER SU PPDUs (16341) with 0.8 …..

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16522 | 409.23 | "UL MU-MIMO and UL OFDMA are precededby a Trigger frame from the AP." does not account for the TRS frame | use statement: UL MU transmissions are preceded by a Trigger frame or frame carrying a TRS Control subfield from the AP. see pg 420 line 28 for similar language | Accept— |

***Discussion***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16524 | 410.01 | "n RU. With OFDMA, different transmit powers may beapplied to different RUs.". Clarify that is it both downlink and uplink | chane to "n RU. With DL and UL OFDMA, different transmit powers may beapplied to different RUs." | Reject—While 802.11ax defines UL and DL OFDMA, this specific section is describing the general concept of OFDMA. The DL and UL OFDMA are discussed in the following sections. |
| 16726 | 409 | Conceptually, the description of OFDM and OFDMA in this paragraph is not accurate. Since they are well-known concepts, it is not necessary to have this paragraph. Also, this paragraph is crossed out in the redlined version. Not sure if it is an editorial error or not. | Remove this paragraph | Reject—The comment doesn’t point out which part of description is not accurate. While the concepts of OFDM and OFDMA are known, this is the first amendment of 802.11 that adds OFDMA feature. A small paragraph introducing the concept is justifiable.  |

Discussion





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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16725 | 378 | In these three bullets, each has a condition for LDPC coding. It is not clear how logically those conditions are related. It is better to put them under one bullet and using "and" or "or" relate them. | See comment | Reject—Each bullet is self contained. If there is a dependency the individual bullet describes it. Note similar procedure is followed elsewhere in the spec. (e.g., entire HE PHY introduction). If the three bullets are combined into one, the sentence will be too long and may lead to misunderstanding.  |
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Discussion





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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16772 | 377.30 | "The HE PHY is based on (...) in the 5 GHz band. The HE PHY is based on (...) in the 2.4 GHz band."The information on the bands comes at the end of a long sentence. For clarity, put "In the 5 GHz band" and " In the 2.4 GHz band" at the beginning of the respective sentence. | Change to: "In the 5 GHz band, the HE PHY is based on (...). In the 2.4 GHz band, the HE PHY is based on (...)." | Revised—Accept the suggestion for the 5GHz and 2.4GHz band. Also add the description for 6GHz bandTGax Editor: make changes for CID 16772 according to 11-18-1841-01-00ax |
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***Discussion***

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

***To TGax editor:***  *Make the following changes on 28.1.1 for CID 16772*

In the 5 GHz band, ~~T~~the HE PHY is based on the VHT PHY defined in Clause 21 (Very High Throughput (VHT) PHY specification), which in turn is based on the HT PHY defined in Clause 19 (High Throughput (HT) PHY specification), which in turn is further based on the OFDM PHY defined in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) ~~in the 5G Hz band~~. In the 2.4 GHz band, ~~T~~the HE PHY is based on HT PHY defined in Clause 19 (High Throughput (HT) PHY specification), which in turn is based on the OFDM PHY defined in Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) ~~in the 2.4GHz band~~. In the 6 GHz band, the HE PHY is the same as the HE PHY in the 5 GHz band.

***------------- End Text Changes ---------------***

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16774 | 379.29 | Confusing bullet: "Single spatial stream HE-MCSs 0 to 7 (transmit) in all supported channel widths and RU sizes forHE MU PPDUs (transmit) or HE TB PPDUs (receive)". First it says in parentheses "(transmit)". Later it also includes "(receive)" for HE TB PPDUs. | Split into two bullets: transmit for MU PPDU and receive for TB PPDU | Revised—The text is edited for clarity.TGax Editor: make changes for CID 16774 according to 11-18-1841-01-00ax |

Discussion:



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

***To TGax editor:***  *Make the change on P.L 379.29*

* Single Spatial stream HE-MCSs 0 to 7 ~~(transmit)~~ (16774) in all supported channel widths and RU sizes for HE MU PPDUs (transmit) or HE TB PPDUs (receive).

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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16776 | 383.01 | Delete "With this format the HE-SIG-A field is notrepeated". This is too much information for this bullet list. Compare to non-HT, HT and VHT format in the same list. No specifics about premable are given. |  | Reject—Unlike previous amendents, 11ax introduces many new PPDU format. Extra text to highlight the differences between these formats may be helpful to the reader. There is no technical error in current text. |
| 16777 | 383.10 | Delete "The preamble format prior to theHE-STF field is identical to the HE SU PPDU". This is too much information for this bullet list. Compare to non-HT, HT and VHT format in the same list. No specifics about premable are given. |  | Reject—Unlike previous amendents, 11ax introduces many new PPDU formats. Extra text to highlight the differences between these formats may be helpful to the reader. There is no technical error in current text. |

Discussion



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| **CID** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 16964 | 377.48 | The spec specified a mask that should be met for preamble puncturing.However, there are other requirements which add more restrictions to preamble puncturing:e.g. "For PPDU bandwidths greater than or equal to 80 MHz, the HE PHY supports preamble punctured HE MUPPDU transmissions where pre-HE modulated fields (see Figure 28-22 (Timing boundaries for HE PPDUfields)) are not transmitted in one or more of the non-primary 20 MHz channels, and RUs associated withthose punctured 20 MHz channels are not allocated". what's meaning of "associated"? It's possible a 242 tone RU overlap with the punctured 20MHz. we don't want to disable this RU for resource allocation. | remove "and RUs associated withthose punctured 20 MHz channels are not allocated." because we define preamble puncturing mask already. | Revised —Clarity that an RU “associated” with the punctured 20MHz subchannels is defined in 28.3.10.8.4 of D3.2TGax Editor: make changes for CID 16964 according to 11-18-1841-01-00ax |
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Discussion



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***To TGax editor:***  *Make the following changes on 28.1.1 for CID 16964*

The HE PHY provides support for 20 MHz, 40 MHz, 80 MHz and 160 MHz contiguous channel widths and support for 80+80 MHz non-contiguous channel width, depending on the frequency band and capability. For PPDU bandwidths greater than or equal to 80 MHz, the HE PHY supports preamble punctured HE MU PPDU transmissions where pre-HE modulated fields (see Figure 28-22 (Timing boundaries for HE PPDU fields)) are not transmitted in one or more of the non-primary 20 MHz channels, and RUs associated with those punctured 20 MHz channels as defined in 28.3.10.8.4 are not allocated.

***------------- End Text Changes ---------------***