IEEE P802.11
Wireless LANs

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| Comment Resolutions on Clause 28.1.1 (HE PHY Introduction) Part 3 |
| Date: 2017-02-09 |
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Abstract

This submission proposes resolutions for the following 18 comments on Clause 28.1.1 of TGax D1.0:

8623, 8624, 8635, 8637, 8638,

8639, 8640, 8733, 8734, 8736,

8738, 8740, 8741, 8742, 8743,

10360, 10404, 10355

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: CID 10360 and 8639 edited.

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** | **Clause Number** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 8623 | 28.1.1 | 219.04 | The bullet list with additional mandatory requirements can be simplified. For instance, it looks like Clause 19 is mandatory in all cases. | Change to:"compliant with the mandatory requirements of the following PHY specifications:- Clause 19- Clause 21 for AP STAs and for non-AP STAs capable of 40 and 80 MHz channel widths in 5 GHz" | Reject—Current sentences provide further clarification on Clause 19 requirements. |
| 8624 | 28.1.1 | 209.24 | Other than mandating Clause 21, how can it be said that the HE PHY is "based on the VHT PHY"? The differences are in fact significant. | I see no need to need to document the whole genealogy. This adds little information. Delete sentence (lines 24-32). | Reject—Yes, HE has many more functions on top of 11ac but the statements in ln 24-32 are true. Furthermore, similar description exists in 11ac spec. |
| 8635 | 28.1.1 | 210.18 | "An HE PPDU using HE MCS 10 or 11". Also, an RU within an MU PPDU using MCS 10 or 11? | Clarify | Reject—The sentence is clear. The rule is not dependent on RU sizes. |
| 8637 | 28.1.1 | 210.31 | "LDPC when declaring support for MCS10 and MCS11". Confirm that this also applies to 20 MHz-only STAs. | See comment | Reject—HE STA refers to both an HE AP STA and HE non-AP STA. A 20 MHz-only STA is an non-AP STA.Thus current sentence applies to 20 MHz-only STAs.Exceptions relating to 20 MHz-only STAs are called upon in clause 28.1.1, wherever applicable. |
| 8638 | 28.1.1 | 210.37 | The GI/HE-LTF mandatory requirements are to support certain combinations of values. Reword for clarity. | For instance "Support for 0.8 usec GI in combination with 2x LTF" (similarly for other cases) | Reject—Agree with the comment. Choice of words is different. The commentor suggests “combination” while current sentence using alternate way to describe the same. |
| 8639 | 28.1.1 | 210.52 | Mandatory support for number of spatial streams is not listed | What is the mandatory number of spatial streams? | Revised—Agree in principal. Proposed resolution accounts for the suggested change.TGax Editor to make the changes shown in IEEE 802.11-17/0246r1 under all headings that include CID 8639. |
| 8640 | 28.1.1 | 210.57 | The GI/HE-LTF mandatory requirements are to support certain combinations of values. Reword for clarity. | For instance "Support for 0.8 usec GI in combination with 1x LTF" (similarly for other cases) | Reject—Agree with the comment. Choice of words is different. The commentor suggests “combination” while current sentence using alternate way to describe the same. |
| 8733 | 28.1.1 | 211.10 | Beam change missing from list? | Add here if appropriate | Reject—The complete list of HE PHY functions is PICS. Clause 28.1.1 tries to highlight majority of them. |
| 8734 | 28.1.1 | 211.16 | Shouldn't sounding also be mandatory for APs that have to support MU-MIMO? | Clarify | Reject—MU-MIMO implicitly requires sounding otherwise the function doesn’t work. Hence, there is no need to call upon sounding function here. |
| 8736 | 28.1.1 | 212.06 | Should CFO/power compensation etc ... be mandatory for non-AP STA that supports UL MU? | Add appropriate requirement | Reject—Yes, it is mandatory.The complete list of HE PHY functions is PICS. Clause 28.1.1 tries to highlight majority of them. |
| 8738 | 28.1.1 | 212.09 | Do we need a term for a non-AP STA sending an HE MU PPDU? This sounds like neither uplink nor downlink. Can it only send to the AP or to other STAs as well? | Clarify | Reject—It refers to an UL SU transmission using an HE MU PPDU. For P2P/Mesh, etc., the UL/DL field is set accordingly in HE-SIG-A. |
| 8740 | 28.1.4 | 213.49 | "Support for the HE SU PPDU format is mandatory." No need to state this here. This bullet lists only possible formats. Mandatory vs.optional is already covered in 28.1.1. | Delete "Support for the HE SU PPDU format is mandatory." | Reject—The current description makes it very clear about M/O support of frame formats. It is helpful to have basic information on PPDU formats in one clause. |
| 8741 | 28.1.4 | 213.52 | "Support for the HE extended range SU PPDU format is mandatory." No need to state this here. This bullet lists only possible formats. Mandatory vs.optional is already covered in 28.1.1. | Delete "Support for the HE extended range SU PPDU format is mandatory." | Reject—The current description makes it very clear about M/O support of frame formats. It is helpful to have basic information on PPDU formants in one clause. |
| 8742 | 28.1.4 | 312.55 | "Support for the HE MU PPDU format is mandatory." No need to state this here. This bullet lists only possible formats. Mandatory vs.optional is already covered in 28.1.1. | Delete "Support for the HE MU PPDU format is mandatory." | Reject—The current description makes it very clear about M/O support of frame formats. It is helpful to have basic information on PPDU formants in one clause. |
| 8743 | 28.1.4 | 213.60 | "Support for the HE trigger-based PPDU format is mandatory." No need to state this here. This bullet lists only possible formats. Mandatory vs.optional is already covered in 28.1.1. | Delete "Support for the HE trigger-based PPDU format is mandatory." | Reject—The current description makes it very clear about M/O support of frame formats. It is helpful to have basic information on PPDU formants in one clause. |
| 10360 | 28.1.4 | 213.58 | The preamble format prior to the HE-STF field is identical to theHE SU PPDU. (1) How do you manage packet preamble overlap. Problem discussed here: https://mentor.ieee.org/802.11/dcn/15/11-15-0550-01-00ax-l-preamble-issues-for-ul-ofdma.pptx (2) add text that indicates preamble only transmitted in 20 MHz that contains data. | As discussed in comment | Reject—* Comment 1: on pg 263 line 50, D0.1: The total power of the time domain HE modulated field signals summed over all transmit chains should not exceed the total power of the time domain pre-HE modulated field signals summed over all transmit chains
	+ Implies that there may be a change in power between both regions of the packet.

Comment 2: on pg 244 line 30 D0.1: In the HE trigger-based PPDU, the pre-HE-STF preamble, which includes legacy preamble, RL-SIG and HE-SIG-A fields, is sent only on the 20 MHz channels where the STA’s HE modulated fields are located. |
| 10404 | 28.1.1 | 209.42 | "Forchannel widths greater than or equal to 80 MHz, the HE PHY supports channel puncturing transmissionswhere one or more of the non-primary 20 MHz channels in an HE MU PPDU with more than one RU iszeroed out." No explicit description of channel puncturing in specification. No discussion of dual transmission with HE-trigger-based PPDU. The duality is alluded to in pg 268 line 62 "Omega : is a set of 20 MHz channels that contains the channels where pre-HE modulated fields arelocated and the channel indices are within 0 to N20MHz - 1 in an HE trigger-based PPDU orHE MU PPDU with preamble puncturing, or equal to {0, 1, …, N20MHz - 1} otherwise." but not explicitly stated. Also no link to preamble puncturing (see pg 82 line 45) | explicitly describe puncturing  | Reject—on pg 244 line 30 D0.1: In the HE trigger-based PPDU, the pre-HE-STF preamble, which includes legacy preamble, RL-SIG and HE-SIG-A fields, is sent only on the 20 MHz channels where the STA’s HE modulated fields are located. |
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**TGax Editor: Please make the following changes to pg 210, Ln 34 (CIDs: 5789, and 9114)**

* **Single spatial stream (#8639) HE-MCSs 0 to 7 (transmit and receive) in all supported channel widths and RU sizes for HE SU PPDUs, HE MU PPDUs, and HE trigger-based PPDUs**

**TGax Editor: Please add the following line on Pg 210 (CIDs: 5789, and 9114)**

**An HE STA may support the following Clause 28 features:**

* **HE-MCSs 8 to 11 (transmit and receive)**
* **Two or more spatial streams (transmit and receive) (#8639)**

**References:**

1. **IEEE P802.11axTM/D1.0, Nov 2016.**