IEEE P802.11  
Wireless LANs

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| **CC36 Comment Resolutions for clause 3.2** |
| **Date:** 2021-10-19 |
| **Author(s):** |

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Abstract

This submission proposes the resolutions for following 21 CIDs:

7959, 7494, 7493, 7487, 7472, 7378, 7368, 7308, 7019, 7018, 7017, 7016, 6917, 5574, 5501, 5500, 5498, 4867, 5437, 5434, and 5331.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Updated the resolution for related to definition of non-OFDMA
* Rev 2: Updated the resolution based on the D1.2

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 TGbe D1.0 Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe D1.0 Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

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

#### *CID 4867, 5331, 5434, 5498, 5574, 7472, and 7494*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 4867 | 3.1 | 42.35 | To use the enhanced features of 11ax, the HE beacon had been defined on a 6GHz band. And, since 11be uses the same OFDM numerology as 11ax, we can reuse the HE beacon in the 6GHz band. So, we don't need to define the EHT beacon. Delete it. | delete the definition of EHT beacon | Accepted. |
| 5331 | 3.2 | 42.35 | The EHT Beacon that is transmitted in EHT SU PPDU does not make any sense: 1. There is no EHT SU PPDU. EHT has only MU PPDU and it seems like poor idea to introduce Beacon in MU PPDU. This as discussed in 802.11ax but it was considered not relevant option, because STAs may not be able to receive such Beacon frame 2. The submission 292r2 that added EHT Beacon did not justify or describe the concept of EHT Beacon. HE SU PPDU may be used in 6 GHz, if higher rates are needed for Beacon | Please delete the definition of the EHT Beacon. | Accepted |
| 5498 | 3.2 | 41.35 | HE beacon was introduced for the usage of 6GHz operation and it's not clear if the EHT beacon needs to be further designed. SInce the definition of EHT beacon in the current draft was just taken from 11ax spec text, It'd better delete this definition until there is enough discussion and validation on the new usage. | As in comment | Accepted. |
| 7472 | 3.2 | 42.35 | EHT single user (SU) PPDU is not defined. Also it's not necessary to define EHT beacon. HT and VHT beacons are not defined. In 6GHz band, HE beacon can be used. | Delete the definition for "extremely high throughput (EHT) beacon". | Accepted. |
| 7494 | 3.2 | 42.35 | A search for EHT beacon didn't hit other than here. | Delete the definition of EHT beacon from 3.2. | Accepted |
| 5434 | 3.2 | 42.35 | There is no EHT SU PPDU | a Beacon frame transmitted to a single user in an EHT MU PPDU | Reivsed.  Except for the 6 GHz operation, I don’t find any use cases for the EHT beacon. Also, In the 6 Ghz band, the HE beacon can be reused. So, this definition can be deleted.  Please refer to the resolution of CID 4867.  TGbe Editor: please apply the same resolution for CID 4867. |
| 5574 | 3.2 | 42.35 | Definitions based on underlying protocol are not informative. | Simplify and enhance understandability of defintion as: "A Beacon frame transmitted by a device that supports the MAC features defined in Clause 35 and the PHY features definced in Clause 36." | Revised.  Since the HE beacon can be reused in the 6 GHz band, we don’t need to newly define the EHT beacon.  Please refer to the resolution of CID 4867.  TGbe Editor: please apply the same resolution for CID 4867. |

Discussion :

P42L35 at D1.0



The beacon was used commonly regardless of the wi-fi version by using the non-HT format. But, in 11ax, the HE beacon was specially defined for the usage of enhanced OFDMA numerology of 11ax and to support the 6 GHz band operation. However, since EHT uses the same OFDMA numerology as HE and it support the HE operation, EHT can reuse the HE beacon for 6 GHz band operation. Therefore, we don’t need to further design the EHT beacon.

#### *CID 5500 and 5501*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 5500 | 3.2 | 42.39 | In the definition of extremely high throughput (EHT) beamformee, "high efficiency (HE) station (STA)" should be "extremely high throughput (EHT) station (STA)" | Modify high efficiency (HE) station (STA) as extremely high throughput (EHT) station (STA) | Accepted. |
| 5501 | 3.2 | 42.44 | In the definition of extremely high throughput (EHT) beamformer, "high efficiency (HE) station (STA)" should be "extremely high throughput (EHT) station (STA)" | Modify high efficiency (HE) station (STA) as extremely high throughput (EHT) station (STA) | Accepted. |

P42L39 at 11be D1.0



#### *CID 6917*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 6917 | 3.1 | 37.04 | The following terms should be defined in subclause 3.1 for EHT - 20 MHz-only non-access-point (non-AP) high efficiency station (EHT STA) - 20 MHz operating non-access-point (non-AP) high efficiency station (EHT STA) - 80 MHz operating non-access-point (non-AP) high efficiency station (EHT STA) - 160 MHz operating non-access-point (non-AP) high efficiency station (EHT STA) | As in commen | Rejected.  The definition for the 20MHz only and 20/80/160 MHz operating non-AP EHT STA is already defined in subclause 3.2. Since this definition is specific to 11be, it is desirable to be defined in subclause 3.2. |

#### *CID 7016*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7016 | 3.2 | 42.58 | Definition of EHT PPDU states "A Clause 36 PPDU that is not a Clause 27 PPDU." Isn't it obvious that a clause 36 PPDU is not a Clause 27 PPDU? Why not list other clauses as well? | Remove " that is not a Clause 27 PPDU" | Accepted. |

P42L58 at 11be D1.0



#### *CID 7017, 7308, and 7959*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7959 | 3.2 | 43.02 | An 80 MHz EHT MU/TB PPDU with only one RU484 is not a non-OFDMA PPDU, for example. | Change  "An EHT PPDU which consists of a single resource unit (RU) or a single multiple resource unit (MRU)."  to  "An EHT PPDU which consists of a single resource unit (RU) or a single multiple resource unit (MRU) that spans the entire spectrum available within the PPDU bandwidth, excluding spectrum which is punctured." | Revised  Agreed with the comment.  The Definition of non-OFDMA was already modified by the resolution for CID 5454 in 11-21/1167r1. And it was already applied to 11be D1.2.  Instruction to the editor: No further change is needed. |
| 7017 | 3.2 | 43.01 | Definition of non-OFDMA PPDU: is it the intention that this covers PPDU with partial BW, e.g. an 80 MHz PPDU with a single 242-tone RU is included? Or is non-OFDMA PPDU intended to cover the equivalent of SU transmission and full-BW MU-MIMO transmission only? | Clarify and adjust definition accordingly | Reivsed.  Agreed with the comment.  The Definition of Non-OFDMA was already modified by the resolution for CID 5454 in 11-21/1167r1. And it was already applied to 11be D1.2.  Instruction to the editor: No further change is needed. |
| 7308 | 3.2 | 43.01 | In addition to "non-OFDMA", "non-MU MIMO" is used regularly thoughout the document as well. | Provide definition of non-MU MIMO | Rejected.  MU-MIMO means that an STA simultaneously transmits or receives the independent data streams over the same frequency resource. This had been defined in subclause 3.1 of 11ax-2021. Since non-MU MIMO is an opposing concept for MU-MIMO and everyone reading this in the spec can know this meaning, we don’t need to define it. |

P47L18 at 11be D1.2



#### *CID 5437and 7018*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 5437 | 3.2 | 43.06 | Define non-OFDMA DL MU-MIMO also or remove UL | as in comment | Rejected.  DL MU-MIMO and non-OFDMA are defined in 802.11 Revme D0.1 and in 11be D1.0 (i.e., P43L01), separately. On the other hand, since UL MU-MIMO is not defined yet, this definition is needed for clarification. |
| 7018 | 3.2 | 43.06 | Definition of non-OFDMA UL PPDU: is it the intention that this covers PPDU with partial BW, e.g. an 80 MHz PPDU with a single 242-tone RU is included? Or is non-OFDMA UL PPDU intended to cover the equivalent of SU transmission and full-BW MU-MIMO transmission only? | Clarify and adjust definition accordingly | Rejected.  Non-OFDMA PPDU means that the PPDU consists of an RU or MRU to support the SU transmission or MU-MIMO transmission. To clarify, the definition of non-OFDMA PPDU was modified by the resolution for CID 5454 in 11-21/1167r1. And it was already applied to 11be D1.2. |

P43L06 at D1.0



#### *CID 7019*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7019 | 3.3 | 37.36 | "Multiple Resource Unit" is not included in the definition list (for comparison "resource unit" is defined in 11ax) | Add definition of "Multiple resource unit" | Rejected.  The MRU consists of multiple RUs and means the combination of multiple RUs. The configuration of MRU is described in clause 36.3.2.2 Subcarriers and resource allocation for multiple RUs. Thus, we don’t need to add the definition of MRU. |

#### *CID 7368*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7368 | 3.2 | 43.16 | An "access point (AP) STA" is not defined anywhere. What does this mean? | Change "access point (AP) STA" to "access point (AP)" | Accepted. |

P43L16 at D1.0



#### *CID 7378*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7378 | 3.2 | 41.50 | What is a "non-AP EHT STA"? | Change all occurances of the term "non-AP EHT STA" to "EHT non-AP STA" throughout the draft. | Rejected.  Non-AP EHT STA means an EHT STA that is not contained within an access point according to the definition of D802.11REVme. It is better to use this wording to make the consistency because this terminology has been used from the 11ax. |

P41L50 at D1.0



#### *CID 7487*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7487 | 3.2 | 40.64 | A VHT STA is an HT STA. An HE STA is an HT STA. An EHT STA is an HT STA. I think it is time to just stop adding the terms and just say "non-high-throughput (non-HT): A modifier meaning not high throughput (HT)." | As in comment. | Rejected.  Based on the previous definition, not high throughput (HT) means legacy ones before HT, so we have added forward standards so far. For clear interpretation, it’s recommended to keep the current texting way |

P40L64 at 11be D1.0



#### *CID 7493*

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| **CID** | **Clause** | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 7493 | 3.2 | 0.00 | Seems not necessary to define the followings: - 20 MHz-only non-access-point (non-AP) extremely high throughput station (EHT STA) - 20 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) - 80 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) - 160 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) It is already allowed for a STA to operate in narrower channel width than it can support. 20 MHz only STA is already allowed from 802.11ax. And former amendments don't define such concepts in 3.2. (If the X MHz operating non-AP EHT STA kind of definition is still necessary, then 40 MHz operating non-AP EHT STA should be also defined, as 802.11be can be used in 2.4 GHz where the 40 MHz width is optional and an STA can still narrow down to 40 MHz by Operating Mode Notification in other bands, too.) | Delete the following definitions: - 20 MHz-only non-access-point (non-AP) extremely high throughput station (EHT STA) - 20 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) - 80 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) - 160 MHz operating non-access-point (non-AP) extremely high throughput station (EHT STA) | Reject.  11be supports the operation of 20MHz-only, 20/80/160MHz operating STA and the operation is already described in many clause in 11be D1.2.  Therefore, to clarify the above, we need to keep the current definition in 3.2 (Definitions specific to IEEE 802.11) |

Discussion:

P41L49 to P42L5 at 11be D1.0





The 11be D1.2 already defines the 20MHz-only, 20/80/160MHz operating STA in 3.2 (Definitions specific to IEEE 802.11) and developed the operation of the STAs in many subclaues such as 36.3.2.5 (20 MHz operating non-AP EHT STAs), 36.3.2.6 (RU and MRU restrictions for 20 MHz operation), 36.3.2.7 (80 MHz operating non-AP EHT STAs), 36.3.2.8 (160 MHz operating non-AP EHT STAs), and 36.1.1 Introduction to the EHT PHY, which are all helpful descriptions for implementers or reader of the Spec to understand and interpret what’s the meaning of the STAs and how the operations are done. So we prefer to keep the current specification.

If we define the 40MHz operating non-AP EHT STA, since it is required that the related descriptions and new subclause for the operation of 40MHz non-AP EHT STA are added through the whole 11be spec, the current 11be spec should do many modifications, whilst the necessity of additional definition of the 40MHz operating STA is not clear and it might require unnecessary implementation or test of another operating type of the non-AP EHT STA. Thus, at this point, it is not recommended to define a new operating non-AP EHT STA which has a new capability and results in modifying the entire specification.