IEEE P802.11
Wireless LANs

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| Comment Resolutions for 11be D0.3 EHT STA Features CIDs |
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Abstract

This submission proposes resolutions of comments received from TGbe comment collection (TGbe Draft 0.3).

* CIDs: 1106, 1719, 2234, 2243, 2260, 2559, 2560 (7 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Added two options for mandatory MLO features
* Rev 2: Added discussion section
* Rev 3: Fixed an error regarding support for 40MHz and 80 MHz operating channel in 6 GHz
1. **Introduction**

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 Draft. The introduction and the explanation of the proposed changes are not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGbe Draft (i.e. they are instructions to the 802.11be 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.***

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| CID | Commenter | Clause  | Page | Line | Comment | Proposed Change | Resolution |
| 1106 | Alfred Asterjadhi | 4.3.15c | 31 | 14 | Technically not correct. These are not the only MAC and PHY features that the EHT STA supports. Suggest removing this sentence and instead add a list of main PHY and main MAC features for 11be. Use similar formatting to 11ax. | As in comment. | **Revised.**Agree with the comment that it is better to delete the cited text and provide a list of the main PHY and MAC features using similar formatting as 11ax. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3under all headings that include CID 1106. |
| 1719 | Hanseul Hong | 4.3.15c | 31 | 13 | Describe main features that are not supported by HE STAs | As in the comment | **Revised.**Agree with the comment to describe the main features that are not supported by HE STAs using similar formatting as 11ax. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 1719. |
| 2234 | Mark Hamilton | 4.3.15c | 31 | 14 | Is an EHT STA (by definition) also an HE STA, similar to what has been done for previous PHYs? | Clarify in 4.3.15c whether an EHT STA must also support the MAC and PHY features of legcay operation. (It appears so, from clauses 35 and 36.) | **Revised.**Agree with the comment that an EHT STA is also an HE STA and also to clarify the features supported by EHT STAs using similar formatting as 11ax. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 2234. |
| 2243 | Massinissa Lalam | 4.3.15c | 31 | 14 | In 11ax draft 8.0, an HE STA was also a VHT/HT STA based on the band. Shouldn't the same apply in the EHT definition. While maybe all EHT features are not completely defined, at least we may consider that an "EHT STA is also an HE STA" for backward comaptibility support stated in the PAR/abstract? | After "The IEEE 802.11 EHT STA operates in frequency bands between 1 GHz and 7.250 GHz." add:"In the 2.4 GHz, 5 GHz and 6 GHz bands, the following apply:- An EHT STA is also an HE STA." | **Revised.**Agree with the comment that an EHT STA is also an HE STA in applicable bands.TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 2243. |
| 2260 | Michael Montemurro | 4.3.15c | 31 | 9 | Surely EHT does more than just operate between 1 and 7 GHz. Describe why EHT is a new amendment to the 802.11 standard and which features it brings, similar to HT, VHT, and HE. | Describe the features for EHT similar to what has been done for previous amendments. | **Revised.**Agree with the comment to describe the main features that are not supported by HE STAs using similar formatting as 11ax. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 2260. |
| 2559 | Rojan Chitrakar | 4.3.15c | 31 | 14 | An EHT STA is also an HE STA, a VHT STA and an HT STA in applicable bands. This sub-clause should specify these. | Add text to state that an EHT STA is also an HE STA, a VHT STA and an HT STA in applicable bands. | **Revised.**Agree with the comment that an EHT STA is also an HE STA in applicable bands. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 2559. |
| 2560 | Rojan Chitrakar | 4.3.15c | 31 | 14 | This section should also highlight the features supported by the EHT PHY and EHT MAC. | Highlight the features supported by the EHT PHY and EHT MAC. | **Revised.**Agree with the comment that to highlight the features that are supported by EHT PHY and MAC using similar formatting as 11ax. TGbe editor to make the changes shown in doc.: IEEE 802.11-21/0299r3 under all headings that include CID 2560. |

**Discussion:**

There are differeing viewpoints regarding the following MAC features, whether they are mandatory for all EHT STAs or only for EHT STAs affiliated with an MLD:

*— support for Multi-link discovery procedure*

*— support for Multi-link (re)setup procedure*

*— support for Multi-link BlockAck procedure*

*— support for link management procedure with default TID-to-link mapping*

*— support for MLD level sequence number spaces*

To provide some context, the following motion as the basis for the above points:

*The support of the following MLO features is mandatory for 802.11be AP and 802.11be STA.*

* *Discovery procedure, setup procedures, security procedures, default mapping (all TIDs mapped to all links, all setup links enabled), TIM indicating BUs at MLD level, BA at MLD level, power save per link, power state change indications per link, and BSS parameter critical update procedure.*
* *NOTE – The above does not preclude other functionalities being added to the list.*

*[Motion 142, #SP303, [53] and [173]]*

While there have been attempts in the MAC group to resolve this difference, consensus has not been reached yet. Two options have been prepared for the above mandatory MLO features, if consensus is not reached, we could run a SP for the two options to gauge the group’s preference.

SP: For the EHT STA Mandatory MLO features, which do you support (choose one)?

* Option 1 (Mandatory for all EHT STAs)
* Option 2 (Mandatory for EHT STAs affiliated with an MLD)
* Abstain

**Propose:**

Revised for CIDs 1106, 1719, 2234, 2243, 2260, 2559, 2560 as per discussion and editing instructions in doc.: IEEE 802.11-21/0299r3.

SP: Do you agree to incorporate the changes provided in 11-21/0299r3 (with Option X) for CIDs 1106, 1719, 2234, 2243, 2260, 2559, 2560 to the next revision of 802.11be draft?

4.3.15c Extremely high throughput (EHT) STA (CIDs 1106, 1719, 2234, 2243, 2260, 2559, 2560)

***TGbe editor: Modify the sub-clause as the following (Track Changes ON):***

The IEEE 802.11 EHT STA operates in frequency bands between 1 GHz and 7.250 GHz.

 (#1106)

In the 5 GHz and 6 GHz bands, the following apply: (#2234, #2243, #2559)

— An EHT STA is also an HE STA

— Support for 20 MHz operating channel width is mandatory in an EHT STA

— Support for 40 MHz and 80 MHz operating channel width is mandatory in an EHT STA that is not a 20 MHz-only non-AP EHT STA

— Support for 160 MHz operating channel width is mandatory in an EHT AP in the 6 GHz band

— Support for 160 MHz operating channel width is optional in an EHT STA in the 5 GHz band

— Support for 160 MHz operating channel width is optional in a non-AP EHT STA in the 6 GHz band

— Support for 320 MHz operating channel width is optional in an EHT STA in the 6 GHz band

In the 2.4 GHz band, the following apply: (#2234, #2243, #2559)

— An EHT STA is also an HE STA

— Support for 20 MHz operating channel width is mandatory in an EHT STA

— Support for 40 MHz operating channel width is optional in an EHT STA

The main PHY features in an EHT STA that are not present in HE STA, VHT STA or HT STA are the following: (#1719, #2260, #2560)

— Mandatory support for MRU

— Mandatory support for non-ODFMA preamble puncturing with any pattern needed to support mandatory MRU for non-OFDMA

— Mandatory support for non-OFDMA UL MU-MIMO transmission for a non-AP EHT STA

— Mandatory support for single spatial stream EHT-MCS 8 and 9 for a non-AP EHT STA that is not a 20 MHz-only non-AP EHT STA

— Mandatory support for single spatial stream EHT-MCS 15 in an RU

— Mandatory support for participating in 160 MHz/320 MHz UL/DL OFDMA for an 80 MHz operating non-AP EHT STA

— Mandatory support for participating in 320 MHz UL/DL OFDMA for a 160 MHz operating non-AP EHT STA

— Optional support for EHT-MCSs 12 and 13

— Optional support for single spatial stream EHT-MCS 14 in 6 GHz band

— Optional support for single spatial stream EHT-MCS 15 in an MRU

The main MAC features in an EHT STA that are not present in HE STA or VHT STA or HT STA are the following:

— Mandatory support for GCMP-256

Option 1 [start] – TGbe editor: this line is not part of text change.

— Mandatory support for Multi-link discovery procedure

— Mandatory support for Multi-link (re)setup procedure

— Mandatory support for Multi-link BlockAck procedure

— Mandatory support for link management procedure with default TID-to-link mapping

— Mandatory support for MLD level sequence number spaces

Option 1 [end] – TGbe editor: this line is not part of text change.

— In an AP affiliated with an AP MLD, mandatory support for serving a single radio non-AP MLD

— In an AP affiliated with an AP MLD that is not an NSTR Soft AP MLD, mandatory support for STR operation

— In an AP affiliated with an NSTR Soft AP MLD, mandatory support for NSTR operation

— In an AP affiliated with an AP MLD, mandatory support for PPDU end time alignment

— In a STA affiliated with a non-AP MLD and operating on a link that is member of a STR link pair, mandatory support for STR operation

Option 2 [start] – TGbe editor: this line is not part of text change.

— In a STA affiliated with an MLD, mandatory support for Multi-link discovery procedure

— In a STA affiliated with an MLD, mandatory support for Multi-link (re)setup procedure

— In a STA affiliated with an MLD, mandatory support for Multi-link BlockAck procedure

— In a STA affiliated with an MLD, mandatory support for link management procedure with default TID-to-link mapping

— In a STA affiliated with an MLD, mandatory support for MLD level sequence number spaces

Option 2 [end] – TGbe editor: this line is not part of text change.

— In a STA affiliated with an MLD, optional support for TID-to-link mapping negotiation

— In a STA affiliated with an MLD, optional support for EMLSR mode

— In a STA affiliated with an MLD, optional support for EMLMR mode

— In a STA affiliated with an MLD, optional support for start time synch PPDUs medium access

— Optional support for NSEP Priority access operation

— Optional support for BlockAck Bitmap field lengths of 512 and 1024

— Optional support for Restricted TWT

— Optional support for Triggered TXOP sharing procedure

--------- End of text changes --------------