IEEE P802.11
Wireless LANs

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| LB271 CR on EHT Operation element |
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Abstract

This submission contains proposed comment resolutions to comments on P802.11be D3.0. The following 29 CIDs are resolved:

15030 15036 15037 17264 17265 17605 15806 15909 17298 17599 17907 17163 17263 17297 17598 17301 17302 17604 17597 17600 17602 17603 17606 17607 17608 17609 17299 17300 17601

Revisions:

- Rev 0: Initial version of the document.

- Rev 1: Defer CID 17301 and update the resolution for CID 17606

- Rev 2: Revise the resolution for CID 17301 and add three new CIDs: 17299, 17300, 17601

- Rev 3: Revise the resolution for CID 17301

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | Clause | Page.Line | Comment | **Proposed Change** | **Resolution** |
| 15030 | Xiangxin Gu | 9.4.2.311 | 250.19 | typo. BBS should be BSS | as the comment | RevisedTGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 15036 | Yongjiang Yi | 9.4.2.311 | 250.19 | 320Mhz EHT BBS | 320Mhz EHT BSS | RevisedTGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 15037 | Yongjiang Yi | 9.4.2.311 | 250.31 | Editorial issue: BBS | BSS | RevisedTGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 17264 | Zinan Lin | 9.4.2.311 | 250.17 | Is "EHT BBS" a typo? It should be "EHT BSS"? | Change to "EHT BSS" if it is typo | RevisedFix this typo.TGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 17265 | Zinan Lin | 9.4.2.311 | 250.31 | Is "EHT BBS" a typo? It should be "EHT BSS"? | Change to "EHT BSS" if it is typo | RevisedFix this typo.TGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 17605 | Brian Hart | 9.4.2.311 | 250.20 | Typo "BBS" | Try "BSS". Ditto L31 | RevisedTGbe editor, please apply the changes with the CID tag (#15030) in 11/23-0692r1 |
| 15806 | Muhammad Kumail Haider | 9.4.2.311 | 248.55 | "set to 1 hat indicates that.." -> "set to 1 to indicate that..." | as in comment | Accepted |
| 15909 | Xiaofei Wang | 9.4.2.311 | 248.55 | what does "1 hat" mean? | please correct | RevisedFix this typo.TGbe editor, please apply the changes with the CID tag (#15806) in 11/23-0692r1 |
| 17298 | Alfred Asterjadhi | 9.4.2.311 | 248.55 | Typo. Replace "hat indicates" with "to indicate" | As in comment. | Accepted |
| 17599 | Brian Hart | 9.4.2.311 | 248.55 | "hat indicates" | Try "to indicate" | Accepted |
| 17907 | Kazuto Yano | 9.4.2.311 | 248.55 | The phrase "hat indicates that" seems a typo. | Please fix it. | RevisedFix this typo. TGbe editor, please apply the changes with the CID tag (#15806) in 11/23-0692r1 |
| 17163 | RUI YANG | 9.4.2.311 | 250.48 | "the 20 MHz subchannel that lies within the BSS bandwidth" sounds confusing. It is better to say "the 20 MHz subchannel that lies within the BSS operating channel (which is defined based on a center frequency and a bandwidth). Otherwise, define "BSS bandwidth" in Clause 3 (Definitions, acronyms, and abbreviations) | as in comment. The similar issue can be found in other part of the draft. | RejectedThe definition of “BSS bandwidth” is used in the baseline REV11me draft. No change is needed. |
| 17263 | Zinan Lin | 9.4.2.311 | 250.6 | Table 9-401a: If the EHT BBS operating bandwidth is 160 MHz or 320 MHz, what field, CCFS0 or CCFS1 should be used? | Please clarify the usage of the CCFS0 and CCFS1 subfields when the EHT BSS operating bandwidth is 160 MHz or 320 MHz. | RejectedThe settings of CCFS 0 and CCFS 1 have been clearly described in Table 9-401a. There is no need to revise them. |
| 17297 | Alfred Asterjadhi | 9.4.2.311 | 248.52 | Missing period. | Append "." at the end of the paragraph. | RevisedAgree. Also replaced set with equal.TGbe editor, please apply the changes with the CID tag (#17297) in 11/23-0692r1 |
| 17598 | Brian Hart | 9.4.2.311 | 248.53 | Missing period at end of sentence | Add period at end of sentence | RevisedAgree. Also replaced set with equal.TGbe editor, please apply the changes with the CID tag (#17297) in 11/23-0692r1 |
| 17301 | Alfred Asterjadhi | 9.4.2.311 | 249.15 | Are "IBSS" and "MBSS" supported by an EHT STA? If yes then please call out the subclauses that govern the behavior. | Please clarify . | RejectedThe comment fails to identify a technical issue. It fails to identify changes in sufficient detail that would satisfy the comment. |
| 17302 | Alfred Asterjadhi | 9.4.2.311 | 249.23 | Please replace "that is defined Figure" with ", which is defined in Figure". | As in comment. | Accepted |
| 17604 | Brian Hart | 9.4.2.311 | 249.23 | Missing preposition | Try "that is defined \*in\* Figure 9-1002c" | RevisedAgree that a preposition is missed.TGbe editor, please apply the changes with the CID tag (#17302) in 11/23-0692r1 |
| 17597 | Brian Hart | 9.4.2.311 | 248.10 | "The operation of EHT STAs in an EHT BSS is controlled" seems like procedural language | Copy P248L10-17 to normative language in clause 35, convert this to a note and include a xref to the clause 35 language | RejectedThere is already similar text for the HT/VHT/HE/DMG Operation element. It’s better to keep this paragraph for consistency.  |
| 17600 | Brian Hart | 9.4.2.311 | 249.01 | Missing article | Try "not in a multiple BSSID set" | RevisedTGbe editor, please apply the changes with the CID tag (#17600) in 11/23-0692r1 |
| 17602 | Brian Hart | 9.4.2.311 | 249.10 | What is this "N"? | Define this in a more meaningful and useful way (i.e., without referring to locally undefined math terms). Try " The Group Addressed BU Indication Exponent subfield encodes infromation about the number of bits in the Partial Virtual Bitmap field for an/the AP MLD as defined in 35.xxx" | RevisedAgree with the comment. Revise this description as “The Group Addressed BU Indication Exponent subfield indicates an exponent value based on which the number of bits in the Partial Virtual Bitmap field for an AP MLD is set to the exponent from which N is calculated as defined in 35.3.15.1 (AP MLD operation for group addressed frames).”TGbe editor, please apply the changes with the CID tag (#17602) in 11/23-0692r1 |
| 17603 | Brian Hart | 9.4.2.311 | 249.21 | Probably unintendedly ambiguous antecedent (it => EHT Operation Information Present subfield) | Try "otherwise the EHT Operation Information field is not present" | RevisedTGbe editor, please apply the changes with the CID tag (#17603) in 11/23-0692r1 |
| 17606 | Brian Hart | 9.4.2.311 | 250.18 | Definition is incorrect.confusing " channel center frequency for a ... 160, or 320 MHz EHT BBS" since in these cases the center of the P80 and P160 MHz is signalled instead and they are not normally considerd "center frequencies" of the BSS. Also bad article. | "This subfield defines the channel center frequency for a 20, 40, or 80 MHz EHT BSS, and the center frequency of a primary X MHz channel for a 160 or 320 MHz EHT BSS | RevisedAgree in principle and revise this definition.TGbe editor, please apply the changes with the CID tag (#17606) in 11/23-0692r1 |
| 17607 | Brian Hart | 9.4.2.311 | 250.29 | Bad article | Singe there is a single center freq for the BSS, then try "the channel center freq" | RevisedTGbe editor, please apply the changes with the CID tag (#17607) in 11/23-0692r1 |
| 17608 | Brian Hart | 9.4.2.311 | 250.44 | Probably unintendedly ambiguous antecedent (it => the BSS bandwidth) | Try "otherwise the DSB subfield is not present" | RevisedTGbe editor, please apply the changes with the CID tag (#17608) in 11/23-0692r1 |
| 17609 | Brian Hart | 9.4.2.311 | 250.49 | Overly complicated language "the 20 MHz subchannel that lies within the BSS bandwidth and that has the lowest frequency of the set of all 20 MHz subchannels within the BSS bandwidth" | Try "the 20 MHz subchannel that lies within the BSS bandwidth and is lowest in frequency" | RevisedTGbe editor, please apply the changes with the CID tag (#17609) in 11/23-0692r1 |
| 17299 | Alfred Asterjadhi | 9.4.2.311 | 248.60 | It is not clear what this field is indicating. There is clearly a limit, by the property of an element being bound by its length. So this "limit" is ambiguous at best. | Please clarify. And also please clarify how it is actually used as well. | RejectedThe Group Addressed BU Indication Limit subfield has been described in 35.3.15 Multi-link operation group addressed frames. No need to add the text for clarification. |
| 17300 | Alfred Asterjadhi | 9.4.2.311 | 249.3 | This sentence has some gramatical issues, e.g., "that are needed" and not clear what "same AP MLDs" means. | Please clarify and fix. | RevisedAgree with commenter in principle. This bullet is revised.TGbe editor, please apply the changes with the CID tag (#17300) in 11/23-0692r2 |
| 17601 | Brian Hart | 9.4.2.311 | 249.4 | There's a lot to unpack in "of all other APs affiliated with the same AP MLDs as all non-transmitted BSSIDs" (e.g., "same AP MLD" seems to make sense, but "same AP MLDs" less so), and the TIM element section doesn't help (e..g, no "AP MLDs") | Add a figure or a xref to a section with a figure. Or perhaps rewrite for greater clarity ... i.e., in troduce the AP MLDs and non-transmitted BSSIDs early in this sentence | RevisedAgree with commenter in principle. This bullet is revised.TGbe editor, please apply the changes with the CID tag (#17300) in 11/23-0692r2. |

***TGbe editor: Change the following subclause as follows:***

* + - 1. **EHT Operation element**

The operation of EHT STAs in an EHT BSS is controlled by the following:

* The HT Operation element, HE Operation element, and EHT Operation element if operating in the

2.4 GHz band

* The HT Operation element, VHT Operation element (if present), HE Operation element, and EHT Operation element if operating in the 5 GHz band
* The HE Operation element and EHT Operation element if operating in the 6 GHz band

The format of the EHT Operation element is shown in [Figure 9-1002a (EHT Operation element format)](#bookmark159).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element ID | Length | Element ID Extension | EHT Operation Parameters | Basic EHT-MCS And Nss Set | EHT Operation Information |

Octets: 1 1 1 1 4 0 or 3 or 5

**Figure 9-1002a—EHT Operation element format**

The Element ID, Length, and Element ID Extension fields are defined in [9.4.2.1 (General)](#bookmark109).

The EHT Operation Parameters field is defined in [Figure 9-1002b (EHT Operation Parameters field format)](#bookmark160).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 | B4 B5 | B6 B7 |
|  | EHT Operation Information Present | Disabled Subchannel Bitmap Present | EHTDefault PE Duration | Group Addressed BU Indication Limit | Group Addressed BU Indication Exponent | Reserved |
| Bits: | 1 | 1 | 1 | 1 | 2 | 2 |

**Figure 9-1002b—EHT Operation Parameters field format**

The EHT Operation Information Present subfield is set to 1 if the EHT Operation Information field is present and set to 0 otherwise. The EHT Operation Information Present subfield is set as described in 35.15.1 (Basic EHT BSS operation).

The Disabled Subchannel Bitmap Present subfield is set to 1 if the Disabled Subchannel Bitmap subfield is present and set to 0 otherwise. The Disabled Subchannel Bitmap Present subfield is reserved if the EHT Operation Information Present subfield is equal to 0.(#17297)

The EHT Default PE Duration subfield is set to 1 (#15806)to indicate that the PE field duration for an EHT TB PPDU solicited by a TRS Control subfield is 20 µs and set to 0 to indicate that the PE field duration is the same as that indicated in the HE Operation Parameters field in the HE Operation element.

The Group Addressed BU Indication Limit subfield indicates whether there is a limit on the number of bits to indicate the presence of buffered group addressed frames of all other APs affiliated with the same AP MLDs as all nontransmitted BSSIDs in a multiple BSSID set in the TIM element or not.

The Group Addressed BU Indication Limit subfield is set to 0 if one of the conditions is met:

* The AP is not in (#17600)a multiple BSSID set.
* The AP is in a multiple BSSID set and the total number of bits in the TIM element that is needed to indicate the presence of buffered group addressed frames for all other APs affiliated with the AP MLDs with which all nontransmitted BSSIDs are affiliated respectively is not greater than 48 bits.(#17300)

Otherwise, the Group Addressed BU Indication Limit subfield is set to 1.

The Group Addressed BU Indication Exponent subfield (#17602)contains an exponent based on which the number of bits in the Partial Virtual Bitmap field for an AP MLD is calculated as defined in 35.3.15.1 (AP MLD operation for group addressed frames).

The Basic EHT-MCS And NSS Set field indicates the EHT-MCSs for each number of spatial streams in EHT PPDUs that are supported by all EHT STAs in the BSS(#17301) (including IBSS and MBSS) for transmission and reception. The Basic EHT-MCS And NSS Set field is defined in [Figure 9-1002ak (EHT-MCS Map](#bookmark221) [(20 MHz-Only Non-AP STA) subfield and Basic EHT-MCS And NSS Set field format)](#bookmark221).

The EHT Operation Information field is present if the EHT Operation Information Present subfield is equal to 1; otherwise (#17603)the EHT Operation Information field is not present. The EHT STA obtains a set of channel configuration parameters from the EHT Operation Information field (if present) (#17302)which is defined in [Figure 9-1002c (EHT Operation Information](#bookmark161) [field format)](#bookmark161).

|  |  |  |  |
| --- | --- | --- | --- |
| Control | CCFS0 | CCFS1 | Disabled Subchannel Bitmap |

Octets: 1 1 1 0 or 2

**Figure 9-1002c—EHT Operation Information field format**

The Control subfield is defined in [Figure 9-1002d (Control subfield format)](#bookmark162),

|  |  |  |
| --- | --- | --- |
|  | B0 B2 | B3 B7 |
|  | Channel Width | Reserved |
| Bits: | 3 | 5 |

**Figure 9-1002d—Control subfield format**

The Channel Width, CCFS0, and CCFS1 subfields are defined in [Table 9-401a (Channel width, CCFS0, and](#bookmark163) [CCFS1 subfields)](#bookmark163).

**Table 9-401a—Channel width, CCFS0, and CCFS1 subfields**

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Channel Width | This subfield defines the EHT BSS bandwidth. | Set to 0 for 20 MHz EHT BSS bandwidth. Set to 1 for 40 MHz EHT BSS bandwidth. Set to 2 for 80 MHz EHT BSS bandwidth. Set to 3 for 160 MHz EHT BSS bandwidth. Set to 4 for 320 MHz EHT BSS bandwidth. Values in the ranges 5 to 7 are reserved. |
| CCFS0 | (#17606)This subfield defines the channel center frequency for a 20, 40, 80 MHz EHT BSS; the primary 80 MHz channel for a 160 MHz EHT BSS, or the primary 160 MHz channel for a 320 MHz EHT (#15030)BSS. | For 20, 40 or 80 MHz BSS bandwidth, indicates the channel center frequency index for the 20, 40 or80 MHz channel on which the EHT BSS operates.For 160 MHz BSS bandwidth, indicates the channel center frequency index of the primary 80 MHz channel.For 320 MHz BSS bandwidth, indicates the channel center frequency index of the primary 160 MHz channel. |
| CCFS1 | This subfield defines (#17607)the channel center frequency for a 160 or 320 MHz EHT (#15030)BSS. | For a 20, 40 or 80 MHz BSS bandwidth, this sub- field is set to 0.For a 160 MHz BSS bandwidth, indicates the chan- nel center frequency index of the 160 MHz channel on which the EHT BSS operates.For a 320 MHz BSS bandwidth, indicates the chan- nel center frequency index of the 320 MHz channel on which the EHT BSS operates. |

The Disabled Subchannel Bitmap subfield is present if the Disabled Subchannel Bitmap Present subfield is equal to 1 and provides a list of subchannels that are punctured within the BSS bandwidth; otherwise (#17608)the Disabled Subchannel Bitmap subfield is not present.

The Disabled Subchannel Bitmap subfield is a 16-bit bitmap where the lowest numbered bit corresponds to the 20 MHz subchannel that lies within the BSS bandwidth and (#17609)is the lowest in frequency of the set of all 20 MHz subchannels within the BSS bandwidth. Each successive bit in the bitmap corresponds to the next higher frequency 20 MHz subchannel. A bit in the bitmap and that lies within the BSS bandwidth is set to 1 to indicate that the corresponding 20 MHz subchannel is punctured and is set to 0 to indicate that the corresponding 20 MHz subchannel is not punctured. A bit in the bitmap that falls outside of the BSS bandwidth is reserved.