### **IEEE P802.11 Wireless LANs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB271 CR for preamble puncturing | | | | |
| Date: 2023-05-01 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Yanjun Sun | Qualcomm |  |  |  |
| Alfred Asterjadhi |  |  |  |  |
| George Cherian |  |  |  |  |
| Youhan Kim |  |  |  |  |
| Bin Tian |  |  |  |  |
| Abhishek Patil |  |  |  |  |
| Duncan Ho |  |  |  |  |
| Gaurang Naik |  |  |  |  |
| Abdel Karim Ajami |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Abstract**

This submission proposes resolutions for the following CIDs for TGbe LB271:

* 17134,17162,17135,17136,16663,
* 17137,16665,16664,16360,17138,
* 16361,16352,17893,17998,18183,
* 18184

**Revisions:**

* Rev 0: Initial version of the document.

***TGbe editor: Please note Baseline is REVme\_D3.0 and 11be D3.1***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CID | Commenter | Clause | Page | Comment | Proposed Change | Resolution |
| 17134 | Mark RISON | 35.15.2 | 643.60 | "An EHT AP may add the Disabled Subchannel Bitmap subfield in the EHT Operation element it includes in transmitted Management frames. " says nothing that's not said more clearly in the next 2 sentences | Delete the cited text | Accepted |
| 17162 | RUI YANG | 35.15.2 | 643.60 | Remove "it includes" in "An EHT AP may add the Disabled Subchannel Bitmap subfield in the EHT Operation element it includes in transmitted Management frames." | as in comment | Revised  Agree with the commenter in principle. The referred text has been deleted.  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #17134, same as above |
| 17135 | Mark RISON | 35.15.2 | 644.05 | "the Table" should be "the table" | As it says in the comment | Accepted |
| 17136 | Mark RISON | 35.15.2 | 644.07 | "may" should be "shall" | As it says in the comment | Accepted |
| 16663 | Liwen Chu | 35.15.2 | 644.11 | Here the bit related to the 20MHz channel outside the BSS BW is set to 1. In P250L55 of subclause 9, the related bit is reserved (being set to 0). | fix the inconsistance | Revised  Agree with the commenter in principle. The referred text has been deleted for consistency of the spec text, as there is no compelling technical reason to set the reserved bits to 1.  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #16663 |
| 17137 | Mark RISON | 35.15.2 | 644.37 | "implicit BAR" should be "Implicit BAR" | As it says in the comment | Accepted |
| 16665 | Liwen Chu | 35.15.2 | 644.41 | The case that the a MU PPDU caaries the frames without soliciting immediate response is missing. | fix the issue mentioned in the comment | Rejected  The comment fails to identify a technical issue. Agree with the commenter that there is no text explicitly discuss the case where “a MU PPDU caaries the frames without soliciting immediate response ”. However, D3.1P644L41 has covered that case and allows additional subchannels to be punctured. Reference: “Otherwise, an EHT STA may puncture other subchannels in addition to those indicated in the Disabled Subchannel Bitmap subfield in the EHT Operation element in an EHT MU PPDU or a non-HT duplicate PPDU” |
| 16664 | Liwen Chu | 35.15.2 | 644.44 | This should not be the behavior of non-AP STAs. | Changr the "STA" in the sentence to "AP" | Revised  Agree with the commenter in principle, as only an EHT AP can send a triggering frame.  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #16664 |
| 16360 | Shimi Shilo | 35.15.2 | 644.59 | Change the phrasing of this sentence, the use of the word 'regardless' is incorrect | Either change to 'regardless of the inclusion of the Disabled Subchannel Bitmap subfield in the EHT operation element by the EHT AP...' or 'regardless of whether the AP has included the Disabled Subchannel Bitmap subfield in the EHT Operation element or not, an ...' | Revised  Both the existing spec text and the suggested text is fine. As “regardless of + none” is more commonly used than “regardless if + sentence), we adopted the first option suggested by the commenter.  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #16360 |
| 17138 | Mark RISON | 35.15.2 | 644.59 | "Regardless if the EHT AP" should be "Regardless of whether the EHT AP" | As it says in the comment | Revised  Agree with the commenter in principle and the referred text has been revised.  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #16360, same as above |
| 16361 | Shimi Shilo | 35.15.2 | 644.61 | It will be clearer to a reader what puncturing patterns are supported by referring in addition to the U-SIG subclause, in addition to 36.3.12.11. | Add reference to Table 36-30 (from the U-SIG subclause) | Rejected  The comment fails to identify a technical issue. The comment is correct in that Table 36-30 lists allowed puncturing pattern for the Disabled Subchannel Bitmap subfield. Existing spec text in D3.0P644L3 already refers to the table. So we don’t need to add duplicate text here. |
| 16352 | Yaron Ben Arie | 35.15.2 | 644.62 | Consider adding reference to Table 36-30 to make the text about puncturing patterns clearer | Add here a reference to Table 36-30 | Rejected  The comment fails to identify a technical issue. The comment is correct in that Table 36-30 lists allowed puncturing pattern for the Disabled Subchannel Bitmap subfield. Existing spec text in D3.0P644L3 already refers to the table. So we don’t need to add duplicate text here. |
| 17893 | Gaurang Naik | 35.15.2 | 643.58 | When the channel switch is to a channel that has at least one punctured subchannel, the affected AP will include a Bandwidth Indication element. The reporting AP will include the corresponding (E)CSA element in the per-STA profile corresponding to the affected AP but the Bandwidth Indication element is not included. Without the bandwidth indication element, the receiving STA will not be aware of the punctured subchannel. | Please add Bandwidth Indication element to the direct inclusion element list in clause 35.3.11 | Revised  Agree with the commenter in principle. Bandwidth Indication element has been added to the element list next to the Extended Channel Switch Announcement element in 35.3.11  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #17893 |
| 17998 | Yanjun Sun | 35.15.2 | 643.59 | Clarification is needed on the 2 methods an EHT AP can use to indicate an updated puncturing pattern in D3.0: 1) indicated via the the Disabled Subchannel Bitmap subfield in the EHT Operation element in the Beacon frame, 2) indicated via the Disabled Subchannel Bitmap subfield in the Bandwidth Indication element of (e)CSA. The key difference between the two methods is that method 2) allows for a more graceful transition based on the channel switch acount. Please clarify the difference to avoid interop issue and add a should requirement for method 2) if a graceful transition is needed. | As in comment | Revised  Agree with the commenter in principle  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #17998 |
| 18183 | Abhishek Patil | 35.15.2 | 643.58 | TPE with EIRP for 320MHz/puncturing is missing. | Please add it for completeness of the spec | Revised  Agree with the commenter in principle  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #18183 |
| 18184 | Abhishek Patil | 35.15.2 | 643.58 | TPE with PSD for 320MHz/puncturing is missing. | Please add it for completeness of the spec | Revised  Agree with the commenter in principle  Tgbe editor please implement changes as shown in doc 11-23/0728r1 tagged as #18184 |

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. This introduction is 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 802.11 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.***

***Tgbe editor: Please update subclause 35.15.2 as follows (track change enabled):***

* + 1. **Preamble puncturing operation**

(#17134)The AP shall set the Disabled Subchannel Bitmap Present subfield to 1 and include the Disabled Subchannel Bitmap subfield in the EHT Operation element if the AP punctures any subchannel for the BSS. Otherwise, the AP shall set the Disabled Subchannel Bitmap Present subfield to 0 and not include the Disabled Subchannel Bitmap subfield in the EHT Operation element. The puncturing pattern indicated in the Disabled Subchannel Bitmap subfield of the EHT Operation element shall be one of the non-OFDMA puncturing patterns defined in Table 36-30 (Definition of the Punctured Channel Information field in the U-SIG for an EHT MU PPDU using non-OFDMA transmissions) whose corresponding PPDU bandwidth value in the (#17135)table is equal to the operating channel width of the BSS. The AP (#17136)shall set each bit in the Disabled Subchannel Bitmap subfield to a value subject to the following constraints:

* The resulting puncturing pattern is one of the puncturing patterns selected above.
* (#16663)The bit in the bitmap that corresponds to the primary 20 MHz subchannel shall be set to 0.

In an EHT BSS set up by an EHT AP that has included the Disabled Subchannel Bitmap subfield in the EHT Operation element, an EHT STA shall set the TXVECTOR parameter INACTIVE\_SUBCHANNELS of an HE, EHT, or non-HT duplicate PPDU based on the value indicated in the most recently exchanged Disabled Subchannel Bitmap subfield in the EHT Operation element for that BSS. If a 20 MHz subchannel is indicated as a punctured subchannel in the Disabled Subchannel Bitmap subfield in the EHT Operation element, the corresponding bit in the TXVECTOR parameter INACTIVE\_SUBCHANNELS shall be set to 1 and the punctured 20 MHz subchannel shall not be used by any PPDU that is transmitted within the operating channel of the EHT AP to a member of the EHT BSS.

An EHT SU transmission that contains an MPDU soliciting an immediate response shall not puncture 20 MHz subchannels that are not indicated to be punctured in the Disabled Subchannel Bitmap subfield in the EHT Operation element, unless the EHT SU transmission carries a triggering frame that solicits a TB PPDU from a responding EHT STA.

An EHT MU PPDU that is not an EHT SU transmission and solicits an immediate response from a STA without including a triggering frame shall not puncture 20 MHz subchannels that are not indicated to be punctured in the Disabled Subchannel Bitmap subfield in the EHT Operation element.

NOTE 1—For example, an EHT MU PPDU using DL OFDMA that sets the ACK policy to (#17137)Implicit BAR to one of the users without including a triggering frame cannot puncture 20 MHz subchannels that are not indicated to be punctured in the Disabled Subchannel Bitmap subfield in the EHT Operation element.

Otherwise, an EHT STA may puncture other subchannels in addition to those indicated in the Disabled Subchannel Bitmap subfield in the EHT Operation element in an EHT MU PPDU or a non-HT duplicate PPDU. (#16664)If an EHT AP punctures other subchannels in an EHT MU PPDU or a non-HT duplicate PPDU in addition to those indicated in the Disabled Subchannel Bitmap subfield and solicits a response to the PPDU, the EHT AP shall use a triggering frame to solicit the response in a TB PPDU and assign an RU or MRU within the nonpunctured subchannel set to a responding EHT STA.

NOTE 2—No other subchannels can be punctured in addition to those indicated in the Disabled Subchannel Bitmap subfield (if present) in the EHT Operation element in the following cases:

* A PPDU carrying an MU-RTS Trigger frame or the solicited CTS frame (see [35.2.2.1 (MU-RTS Trigger frame](#bookmark7) [transmission)](#bookmark7)).
* An EHT sounding NDP for non-TB sounding (see [35.7.2 (EHT sounding protocol)](#bookmark128)).
* A PPDU that carries a CF-End frame from a non-AP EHT STA, as it might be followed by another CF-End frame after SIFS (see 10.23.2.10 (Truncation of TXOP)).

(#16360)Regardless of the inclusion of the Disabled Subchannel Bitmap subfield in the EHT Operation element, an EHT STA may use EHT MU PPDU preamble puncturing modes as defined in 36.3.12.11 (EHT preamble of preamble punctured EHT MU PPDU) or EHT TB PPDU in which not all the 20 MHz subchannels are assigned.

(#17998)An EHT AP may indicate a puncturing pattern change for the current BSS operating channel in an EHT Operation element or a Channel Switch Wrapper element (see 35.15.3 (Channel switching methods for an EHT BSS)).

NOTE—The Channel Switch Count field in a Channel Switch Announcement element or an Extended Channel Switch Announcement element sent together with the Channel Switch Wrapper element allows the AP to notify the associated non-AP STAs in advance about the upcoming puncturing pattern , so it is recommended to use the Channel Switch Wrapper element to indicate the puncturing pattern change.

***Tgbe editor: Please update subclause 35.3.11 as follows (track change enabled):***

**35.3.11 Multi-link procedures for channel switching, extended channel switching, and**

**channel quieting**

… …

If an AP (affected AP) affiliated with an AP MLD includes any of the following applicable elements outside

the Basic Multi-Link element in the Beacon frame, Probe Response frame or (Extended) Channel Switch

Announcement frame it transmits:

— Channel Switch Announcement element

— Extended Channel Switch Announcement element

(#17893)-- Bandwidth Indication element

… …

If an AP corresponding to the transmitted BSSID in a multiple BSSID set includes any of the following

elements in the Beacon frame or Probe Response frame it transmits so that any of these elements is inherited

for the affected AP in these frames:

— Channel Switch Announcement element

— Extended Channel Switch Announcement element

(#17893)-- Bandwidth Indication element

… …

If an AP affiliated with an AP MLD is switching channel, the Channel Switch Announcement element, or

the Extended Channel Switch Announcement element with the Channel Switch Count field of the

(Extended) Channel Switch Announcement element set to a nonzero value, (#17893)the Bandwidth Indication element and the Max Channel Switch

Time element shall be included in every Beacon and Probe Response frames on all links of the AP MLD

from right after the time the AP includes the elements in the Beacon frame it transmits until the estimated

channel switch time. After the estimated channel switch time, the Channel Switch Announcement element,

the Extended Channel Switch Announcement element and the Bandwidth Indication element(#17893) shall not be included in the per-STA profile

(#16597)corresponding to the affected AP in the Beacon and Probe Response frames and the Max Channel

Switch Time element shall be included in the per-STA profile of the affected AP in every Beacon and Probe

Response frames on all links of the AP MLD until the affected AP resumes BSS operation on the new

channel. The value carried in the Switch Time field indicates the adjusted estimated time of the first Beacon

frame in the new channel.

***Discussion for CID 18183:***

*Issue: for TPE indicating an EIRP, there is no normative text on how to interpret reserved values for the Maximum Transmit Power Count subfield, so the behavior of a legacy STA is unknown if any value between 4-7 is used*

A picture containing text, screenshot, font, number

Description automatically generated

*To avoid interop issues with the legacy STAs deployed in the field, the group has discussed two options in the past:*

* *Option1: Append a new subfield to the existing TPE, which is an extensible element* 
  + *Pros: lowest overhead (1 octet only), proposed text in* [*22/1482r7*](https://mentor.ieee.org/802.11/dcn/22/11-22-1482-07-00be-lb266-cr-for-preamble-puncturing.docx) *has been discussed*
* *Option2: Carry an EHT TPE together with the legacy TPE in a Beacon frame*
  + *Pros: more flexibility for future expansion, not getting enough support due to larger overhead*
* *Option3: any other proposal?*

*The text below is copied from* [*22/1482r7*](https://mentor.ieee.org/802.11/dcn/22/11-22-1482-07-00be-lb266-cr-for-preamble-puncturing.docx) *based on option1.*

Tgbe Editor: modify the following paragraph (P1234L50 in 11meD2.0) in 9.4.2.161 Transmit Power Envelope element as follows (track change enabled)

~~Local~~ Maximum Transmit Power For *X* MHz fields (where *X* = 20, 40, 80, or 160/80+80) define the local maximum transmit power limit of *X* MHz PPDUs, except for an HE TB PPDU and for an EHT TB PPDU where *X* MHz is the bandwidth of the pre-HE and pre-EHT modulated fields of the HE TB PPDU and EHT TB PPDU transmitted by a STA. Each ~~Local~~ Maximum Transmit Power For *X* MHz field is encoded as an 8-bit 2s complement signed integer in the range –64 dBm to 63 dBm with a 0.5 dB step. Setting this field to 63.5 dBm indicates 63.5 dBm or higher (i.e., no local maximum transmit power constraint).(#18183)

Tgbe Editor: modify Table 9-691 Transmit Power Envelope element format as follows (track change enabled)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Transmit Power Information | Maximum Transmit Power | Extension Maximum Transmit Power |
| Octets: | 1 | 1 | 1 | variable | variable(#18183) |
| * **Transmit Power Envelope element format(11ax)** | | | | |  |

Tgbe Editor: add a new Figure 9-xxx-Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 0 or 2 as follows

|  |  |
| --- | --- |
|  | Maximum Transmit Power For 320 MHz |
| Octets: | 1 |

**Figure 9-xxx-Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 0 or 2**(#18183)

Tgbe Editor: add the following paragraph after the Figure 9-xxx-Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 0 or 2

(#18183)Maximum Transmit Power For 320 MHz fields define the local maximum transmit power limit of 320 MHz PPDUs, except for an EHT TB PPDU where 320 MHz is the bandwidth of the pre-EHT modulated fields of the EHT TB PPDU transmitted by a STA. The Maximum Transmit Power For 320 MHz field is encoded as an 8-bit 2s complement signed integer in the range –64 dBm to 63 dBm with a 0.5 dB step. Setting this field to 63.5 dBm indicates 63.5 dBm or higher (i.e., no local maximum transmit power constraint).

Tgbe Editor: Add the following paragraphs at the end of 9.4.2.161 Transmit Power Envelope element

(#18183)The format of the Extension Maximum Transmit Power field is defined in Figure 9-xxx (Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 0 or 2) if the Maximum Transmit Power Interpretation subfield is 0 or 2.

(#18183)The Extension Maximum Transmit Power field is included only following conditions defined in 35.16.3 (EHT operation with the Transmit Power Envelope element).

TGbe Editor: Add the following subclause 35.15.4 EHT operation with the Transmit Power Envelope element

(#18183)**35.15.4 EHT operation with the Transmit Power Envelope element**

An EHT STA follows the rules defined in 10.22.4 (Operation with the Transmit Power Envelope element) and the rules defined in this subclause.

The Extension Maximum Transmit Power field shall be included in the Transmit Power Envelope element by an AP only if the following condition is met:

* the AP is operating in the 6 GHz band, the Maximum Transmit Power Interpretation subfield is 0 or 2, and the EHT BSS operating channel width is 320 MHz.

If the Extension Maximum Transmit Power field is included and if the Maximum Transmit Power Interpretation subfield is 0 or 2, then the Maximum Transmit Power Count field shall be set to 3.

In a Transmit Power Envelope element transmitted by an EHT AP with the Maximum Transmit Power Interpretation subfield set to 0 or 2, the Maximum Transmit Power For X MHz subfield shall be included (where X = 20, 40, 80, 160/80+80, or 320) if X is less than or equal to the operating channel width of the corresponding EHT BSS.

**Discussion on CID 18184**

There were 3 candidates solutions discussed:

* Option1: use the reserved values in the Maximum Transmit Power Count subfield in TPE defined in 11ax to indicate 320 MHz TPE
* Option2: proposal in this CR, inherited from [*22/1482r7*](https://mentor.ieee.org/802.11/dcn/22/11-22-1482-07-00be-lb266-cr-for-preamble-puncturing.docx)
* Option3: define a new EHT TPE and send it together with HE TPE in the same frame
* Option4: any alternative?

**Issue with option1: unknown behavior for HE STAs already in the field (i.e. backward compatibility risk)**

TPE in HE has two flavors: EIRP and PSD. For EIRP, there is no rule defined on how an HE STA interprets a reserved value (e.g. 4-7) in the Maximum Transmit Power Count subfield. For PSD, the HE rules were defined without knowing static puncturing rules in EHT, so HE STA behavior is unknown if we try to use the reserved value in some cases. Please see an example below.

HE BSS: 40 MHz operating bandwidth

EHT BSS: 320 MHz operating bandwidth with S40 punctured



In this case, two HE rules would result into two possible conflicting settings on the first 2 PSD values in TPE.

1) Max Transmit Power field for P160 based on the following 11ax rule: “If the BSS bandwidth is 20, 40, 80 or 160 MHz, then the Maximum Transmit PSD 1-N subfields correspond to 20 MHz channels from lowest to highest frequency, respectively, within the indicated bandwidth”



2) Max Transmit Power field for P160 based on the 11ax text: “If N is greater than 8, the Maximum Transmit PSD 1-8 subfields correspond to the 20 MHz channels from lowest to highest frequency, respectively, within the 160 MHz channel containing the primary 20 MHz channel”



In summary, option1 not only requires amendment in 11me but also faces the risk of backward compatibility for HE STAs already in the field.

Both option2 (proposal in this CR, inherited from [*22/1482r7*](https://mentor.ieee.org/802.11/dcn/22/11-22-1482-07-00be-lb266-cr-for-preamble-puncturing.docx)) and option3 (define a new EHT TPE and send it together with HE TPE in the same frame) can handle 320 MHz without concerns on backward compatibility. As TPE is an extensible element, both solutions can be expanded later for future amendement. The main difference between option2 and option3 is that option3 has larger overhead in Beacon frames (e.g. at least 4 octets extra overhead for each co-hosted BSS).

Tgbe Editor: Add the following paragraphs at the end of 9.4.2.161 Transmit Power Envelope element

(#18184)The format of the Extension Maximum Transmit Power field is defined in Figure 9-xx2 (Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 1 or 3) the same as the Maximum Transmit Power field if the Maximum Transmit Power Interpretation subfield is 1 or 3, as defined in Figure 9-617b (Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 1 or 3).

|  |  |  |
| --- | --- | --- |
|  | Extension Transmit PSD Information | Maximum Transmit PSD Values |
| Octets: | 1 | variable |

**Figure 9-xx2-Extension Maximum Transmit Power field format if the Maximum Transmit Power Interpretation subfield is 1 or 3**(#18184)

The format of the Extension Transmit PSD Information subfield is defined in Figure 9-xx3 (Extension Transmit PSD Information subfield format). The Extension Count subfield determines the value of an integer *K*, which indicates the number of 20 MHz channels for which a maximum transmit PSD is included in the Maximum Transmit PSD Values subfield of the Extension Maximum Transmit Power field.

B0 B3 B4 B7

|  |  |  |
| --- | --- | --- |
|  | Extension Count | Reserved |
| Bits: | 4 | 4 |

**Figure 9-xx3—Extension Transmit PSD Information subfield format** (#18184)

The format of the Extension Maximum Transmit PSD Values subfield is the same as the Maximum Transmit Power field as defined in Figure 9-694 (Maximum Transmit Power field format if Maximum Transmit Power Interpretation subfield is 1 or 3).

TGbe Editor: Add the following sentence to 9.4.2.161 (Transmit Power Envelope element) , at 11meD2.0P1235L58, right after “If N is greater than 0 and less than 2, 4, or 8 for 40, 80, or 160 MHz BSS bandwidth, respectively, then the indicated bandwidth is the primary 20 MHz, primary 40 MHz, or primary 80 MHz channel for N equal to 1, 2, or 4, respectively.”

(#18184)If the Extension Maximum Transmit Power field is included and the Maximum Transmit Power Interpretation subfield is 1 or 3, then:

* If N+K is equal to 2, 4, 8 or 16 for 40, 80, 160 or 320 MHz EHT BSS bandwidth, respectively, then the indicated bandwidth is the EHT BSS bandwidth.
* If N+K is less than 4, 8 or 16 for 80, 160 or 320 MHz EHT BSS bandwidth, respectively, then the indicated bandwidth is the primary 40 MHz, primary 80 MHz or primary 160 MHz channel for N+K equal to 2, 4, 8 respectively.
* If N+K is greater than 2, 4, 8 or 16 for 40, 80,160 or 320 MHz EHT BSS bandwidth, respectively, then the indicated bandwidth is wider than the EHT BSS bandwidth.
  + The Maximum Transmit PSD 1-M subfields correspond to the 20 MHz channels within the EHT BSS bandwidth in the order as described in this subclause, where M is 4, 8, or 16 for 80, 160 or 320 MHz EHT BSS bandwidth, respectively.
  + The Maximum Transmit PSD (M+1)-(N+K) subfields are reserved for future use

(#18184)If the Extension Maximum Transmit Power field is **not** included, the Maximum Transmit Power Interpretation subfield is 1 or 3, and N is greater and 0, then:

* If N is less than 2, 4, 8 or 16 for 40, 80, 160 or 320 MHz BSS bandwidth, respectively, then the indicated bandwidth is the primary 20 MHz, 40 MHz, primary 80 MHz channel or primary 160 MHz channel for N equal to 1, 2, 4, 8 respectively.

TGbe Editor: Add the following text to the end of subclause 35.15.4 (EHT operation with the Transmit Power Envelope element)

(#18184)The Extension Maximum Transmit Power field shall be included in the Transmit Power Envelope element by an AP only if the following conditions is met:

* the AP is operating in the 5GHz or 6 GHz band, the AP is announcing a BSS operating channel width to EHT non-AP STAs in EHT Operation element that is different from the EHT BSS operating channel width that it announces to non-EHT non-AP STAs (see 35.165.1 Basic EHT BSS operation) and the Maximum Transmit Power Interpretation subfield is 1 or 3, and the value of *N* determined from the Maximum Transmit Power Count subfield is greater than 0 and the number of 20 MHz subchannels covered by Transmit Power Envelope element is greater than the number of 20 MHz subchannels contained within the HE BSS operating channel width.

(#18184)If the Extension Maximum Transmit Power field is included and if the Maximum Transmit Power Interpretation subfield is 1 or 3, then:

* the Transmit Power Information field and the Maximum Transmit Power field shall be computed with the BSS operating channel width of the AP that is different from the EHT BSS operating channel width.
* the Extension Maximum Transmit Power field shall be computed as follows:
  + The Extension Count subfield of the Extension Transmit PSD Information subfield is set to the value of *K*, corresponding to the number of 20 MHz subchannels for each of which the Transmit Power Envelope element has included a maximum transmit PSD, minus the number of 20 MHz subchannels contained within the BSS operating channel.
  + the Maximum Transmit PSD 1-*K* subfields correspond  
    to 20 MHz channels from lowest to highest frequency, respectively, within the EHT BSS operating channel, excluding the 20 MHz channels within the BSS operating channel.