IEEE P802.11
Wireless LANs

|  |
| --- |
| CR of CIDs 4147 and 5311 |
| Date: 2022-02-21 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yunbo Li | Huawei |  |  | liyunbo@huawei.com |
| Ming Gan |  |  |  |  |
| Yuchen Guo |  |  |  |  |
| Guogang Huang |  |  |  |  |
| Yiqing Li |  |  |  |  |
| Zhenguo Du |  |  |  |  |
| Rob Sun |  |  |  |  |
| Stephen McCann |  |  |  |  |
| Edward Au |  |  |  |  |
| Michael Montemurro |  |  |  |  |

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.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 5311 | Jarkko Kneckt | 17.3.5.2 | 237.59 | The RTS and CTS frames should be able to signal more BW combinations. Please consider allocating more service field bits to signal BW configurations. | Please add more possilibities to signal preamble puncturing in bits of Service field | Rejected The static preamble puncture is already supported without preamble puncture signalling in RTS/CTS. There is no typical scenario that requires preamble puncturing signalling in RTS/CTS. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 4147 | Alfred Asterjadhi | 9.3.1.19 | 78.49 | What is the bandwidth signaling TA (320 Mhz amendment) used for in the NDPA? I assume not all recepients (broadcast frame) will understand it? Please clarify | As in comment. | RevisedAgree with the commenter’s question. When a target STA doesn’t understand the signalling of 320MHz, the STA will have misunderstanding of the bandwidth of NDPA frame. To solve this problem, one way is that AP doesn’t carry bandwidth signalling if at least one target STA cannot understand the 320MHz signalling. But in this case, the target STA cannot get bandwith of NDPA frame anymore. Another way is mandate that all EHT 6GHz STA can understand the 320MHz signalling. The second way looks better. The resolution is prepared based on the second approach. TGbe editor to make changes in 11-22/0230r4 under CID 4147 |

***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).***

Discussion of CID 4147:

The following considers a scenario that may cause misunderstanding of the bandwidth of a NDPA frame. An EHT AP that is a STA 6G with 320MHz bandwidth support sends a NDPA frame target to multiple STAs, among which some target STAs support 320MHz bandwidth, while the other target STAs don’t support 320MHz. Here, let’s assume a target STA1 supports 320MHz and target STA2 doesn’t support 320MHz. STA2 will think that the BW is only carried in the scrambling sequence instead of carried in the scrambling sequence + SERVICE field.

**Solution 1: When an EHT AP transmits a 320MHz NDPA frame, if at least one target STA doesn’t support 320MHz bandwidth, then BW is not carried in the 320MHz NDPA.**

A drawback of solution1 is that the target STAs cannot get BW info of NDPA frame in this case.

**Solution 2: Mandate all EHT STA that are STA 6G understand the BW signalling through scrambing sequence and SERVICE field.**

It is similar to an EHT STA that supports narrower bandwidth that also needs to understand the 320MHz Trigger frame and MU-PPDU. The narrowband EHT STA can involve the scheduling of 320MHz Trigger frame or 320MHz MU-PPDU.

Comparing with the two solutions, solution 2 is preferred.

Base on the discussion during the teleconference, some member mentioned that the issue in CID 4147 doesn’t occur when the receiver STA is an AP. There are two different opinions whether disgituish from AP and non-AP side for the solution. Some member prefer mandate all EHT STA 6GHz to understand 320MHz signalling to keep the procedures simple and clean, while others want to different requirements for AP STA and non-AP STA as a receiver.

Two options are prepared

* Opt 1: mandate all EHT STAs at 6GHz to understand 320MHz BW signalling
* Opt 2: mandate EHT APs at 6GHz that support 320MHz and EHT non-AP STAs at 6GHz to understand 320MHz BW signaling
1. **Proposed spec text**

-----------------------------------------------------Strat point of Opt 1-----------------------------------------------------------------

***TGbe editor: Modify the paragraphs in 9.3.1.2 (RTS frame format), 9.3.1.5 (PS-Poll frame format), 9.3.1.6 (CF-End frame format), 9.3.1.7 (BlockAckReq frame format), and 9.3.1.19 (VHT/HE/Ranging/EHT NDP Announcement frame format) as follows:***

**9.3.1.2 RTS frame format**

The TA field is the address of the STA transmitting the RTS frame or the bandwidth signaling TA of the STA transmitting the RTS frame. In an RTS frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format to another EHT STA that is a STA 6G (#4147), the scrambling sequence and SERVICE field carry the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT and the TA field is a band-width signaling TA. In an RTS frame transmitted by a VHT STA or an HE STA in a non-HT or non-HT duplicate format to another VHT STA or HE STA, the The scrambling sequence carries the TXVEC-TOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT (see 10.3.2.7 (VHT and SIG RTS procedure)) and the TA field is a bandwidth signaling TA, when an RTS frame transmitted in a non-HT or non-HT duplicate format in either one of the following cases:

from a VHT STA, an HE STA, an EHT STA that is not a STA 6G, or an EHT STA that is a STA 6G without 320 MHz bandwidth support to another VHT STA, HE STA, or an EHT STA

(#4147)

**9.3.1.5 PS-Poll frame format**

**9.3.1.5.1 General**

The BSSID (RA) field is set to the address of the STA contained in the AP. The TA field value is the address of the STA transmitting the frame or a bandwidth signaling TA. In a PS-Poll frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA. In a PS-Poll frame transmitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA.

**9.3.1.6 CF-End frame format**

If transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support to an EHT AP that is a STA 6G(#4147), the BSSID (TA) field is the address of the STA contained in the AP except that the Individual/Group bit of the BSSID (TA) field is set to 1 in a CF-End frame in a non-HT or non-HT duplicate format to indicate that the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT. If transmitted by a non-DMG STA, the BSSID (TA) field is the address of the STA contained in the AP, except that the Individual/Group bit of the BSSID (TA) field is set to 1 in a CF-End frame transmitted in a non-HT or non-HT duplicate format by a VHT STA to a VHT AP, or an HE STA to an HE AP in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT in either of the following cases:

from a VHT STA, an HE STA, an EHT STA that is not a STA 6G, or an EHT STA that is a STA 6G without 320 MHz bandwidth support to a VHT AP, an HE AP, or an EHT AP

(#4147)

If transmitted by a DMG STA, the TA field is the MAC address of the STA transmitting the frame.

**9.3.1.7 BlockAckReq frame format**

**9.3.1.7.1 Overview**

The TA field value is the address of the STA transmitting the BlockAckReq frame or a bandwidth signaling TA. In a BlockAckReq frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signalling TA. In a BlockAckReq frame transmitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BAND-WIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA.

**9.3.1.19 VHT/HE/Ranging/EHT NDP Announcement frame format**

The TA field is set to the address of the STA transmitting the VHT/HE/Ranging NDP Announce-ment frame or the bandwidth signaling TA of the STA transmitting the VHT/HE/Ranging NDP Announce-ment frame. In an EHT NDP Announcement frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field is set to a bandwidth signaling TA. In an VHT/HE/Ranging NDP Announcement frame trans-mitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field is set to a bandwidth signaling TA.

***TGbe editor: Modify the Table 17-2 RXVECTOR parameters in 17.2.3 (RXVECTOR parameters) as follows:***

**Table 17-2—RXVECTOR parameters**

|  |  |  |
| --- | --- | --- |
| Parameter | **Associated primitive** | **Value** |
| CH\_BANDWIDTH\_IN\_NON\_HT | PHY-RXSTART.request(RXVECTOR) | Not present if neither dot11VHTOptionImplemented nor dot11HEOptionImplemented is present or equal to true.Present if at least one of dot11VHTOptionImplemented and dot11HEOptionImplemented is present and equal to true.If dot11EHTOptionImplemented is not present or equal to false, then the allowed values areIf present, CBW20, CBW40, CBW80, CBW160, or CBW80+80.If dot11EHTOptionImplemented is equal to true and the STA is not a STA 6G (#4147), then the allowed values are CBW20, CBW40, CBW80, or CBW160.If dot11EHTOptionImplemented is equal to true and the STA is a STA 6G(#4147), then the allowed values are CBW20, CBW40, CBW80, CBW160, or CBW320. |
| DYN\_BANDWIDTH\_IN\_NON\_HT | PHY-RXSTART.request(RXVECTOR) | Not present if neither dot11VHTOptionImplemented nor dot11HEOptionImplemented is present or equal to true.Present if at least one of dot11VHTOptionImplemented and dot11HEOptionImplemented is present and equal to true, then the allowed values are Static or Dynamic. |

***TGbe editor: Modify below paragraphs in 17.3.5.5 (PHY DATA scrambler and descrambler) as follows:***

During reception by a VHT STA, HE STA, or EHT STA that is not a STA 6G (#4147), RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT shall be determined from selected bits in the scrambling sequence as shown in Table 17-7 (Contents of the first 7 bits of the scrambling sequence) and Table 17-9 (RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT values for a VHT or HE STA).

During reception by an EHT STA that is a STA 6G(#4147), the RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT shall be determined from selected bits in the scrambling sequence as shown in Figure 17-6 (SERVICE field bit assignment), Table 17-7 (Contents of the first 7 bits of the scrambling sequence), and Table 17-9a (RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT values for an EHT STA).

***End of change***

-----------------------------------------------------End point of Opt 1-----------------------------------------------------------------

-----------------------------------------------------Start point of Opt 2-----------------------------------------------------------------

***TGbe editor: Modify the paragraphs in 9.3.1.2 (RTS frame format), 9.3.1.5 (PS-Poll frame format), 9.3.1.6 (CF-End frame format), 9.3.1.7 (BlockAckReq frame format), and 9.3.1.19 (VHT/HE/Ranging/EHT NDP Announcement frame format) as follows:***

**9.3.1.2 RTS frame format**

The TA field is the address of the STA transmitting the RTS frame or the bandwidth signaling TA of the STA transmitting the RTS frame. In an RTS frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format to another EHT non-AP STA that is a STA 6G or another EHT AP that is a STA 6G with 320 MHz bandwidth support (#4147), the scrambling sequence and SERVICE field carry the TXVECTOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT and the TA field is a band-width signaling TA. In an RTS frame transmitted by a VHT STA or an HE STA in a non-HT or non-HT duplicate format to another VHT STA or HE STA, the The scrambling sequence carries the TXVEC-TOR parameters CH\_BANDWIDTH\_IN\_NON\_HT and DYN\_BANDWIDTH\_IN\_NON\_HT (see 10.3.2.7 (VHT and SIG RTS procedure)) and the TA field is a bandwidth signaling TA, when an RTS frame transmitted in a non-HT or non-HT duplicate format in either one of the following cases:

from a VHT STA, an HE STA, an EHT STA that is not a STA 6G, or an EHT STA that is a STA 6G without 320 MHz bandwidth support to another VHT STA, HE STA, or an EHT STA

from an EHT STA that is a STA 6G with 320 MHz bandwidth support to an EHT AP that is a STA 6G without 320 MHz bandwidth support(#4147)

**9.3.1.5 PS-Poll frame format**

**9.3.1.5.1 General**

The BSSID (RA) field is set to the address of the STA contained in the AP. The TA field value is the address of the STA transmitting the frame or a bandwidth signaling TA. In a PS-Poll frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA. In a PS-Poll frame transmitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA.

**9.3.1.6 CF-End frame format**

If transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support to an EHT AP that is a STA 6Gwith 320 MHz bandwidth support(#4147), the BSSID (TA) field is the address of the STA contained in the AP except that the Individual/Group bit of the BSSID (TA) field is set to 1 in a CF-End frame in a non-HT or non-HT duplicate format to indicate that the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT. If transmitted by a non-DMG STA, the BSSID (TA) field is the address of the STA contained in the AP, except that the Individual/Group bit of the BSSID (TA) field is set to 1 in a CF-End frame transmitted in a non-HT or non-HT duplicate format by a VHT STA to a VHT AP, or an HE STA to an HE AP in a non-HT or non-HT duplicate format to indicate that the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT in either of the following cases:

from a VHT STA, an HE STA, an EHT STA that is not a STA 6G, or an EHT STA that is a STA 6G without 320 MHz bandwidth support to a VHT AP, an HE AP, or an EHT AP

from an EHT STA that is a STA 6G with 320 MHz bandwidth support to an EHT AP that is a STA 6G without 320 MHz bandwidth support(#4147)

If transmitted by a DMG STA, the TA field is the MAC address of the STA transmitting the frame.

**9.3.1.7 BlockAckReq frame format**

**9.3.1.7.1 Overview**

The TA field value is the address of the STA transmitting the BlockAckReq frame or a bandwidth signaling TA. In a BlockAckReq frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signalling TA. In a BlockAckReq frame transmitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BAND-WIDTH\_IN\_NON\_HT, the TA field value is a bandwidth signaling TA.

**9.3.1.19 VHT/HE/Ranging/EHT NDP Announcement frame format**

The TA field is set to the address of the STA transmitting the VHT/HE/Ranging NDP Announce-ment frame or the bandwidth signaling TA of the STA transmitting the VHT/HE/Ranging NDP Announce-ment frame. In an EHT NDP Announcement frame transmitted by an EHT STA that is a STA 6G with 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence and SERVICE field carry the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field is set to a bandwidth signaling TA. In an VHT/HE/Ranging NDP Announcement frame trans-mitted by a VHT STA, or an HE STA, an EHT STA that is not a STA 6G or an EHT STA that is a STA 6G without 320 MHz bandwidth support in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field is set to a bandwidth signaling TA.

***TGbe editor: Modify the Table 17-2 RXVECTOR parameters in 17.2.3 (RXVECTOR parameters) as follows:***

**Table 17-2—RXVECTOR parameters**

|  |  |  |
| --- | --- | --- |
| Parameter | **Associated primitive** | **Value** |
| CH\_BANDWIDTH\_IN\_NON\_HT | PHY-RXSTART.request(RXVECTOR) | Not present if neither dot11VHTOptionImplemented nor dot11HEOptionImplemented is present or equal to true.Present if at least one of dot11VHTOptionImplemented and dot11HEOptionImplemented is present and equal to true.If dot11EHTOptionImplemented is not present or equal to false, then the allowed values areIf present, CBW20, CBW40, CBW80, CBW160, or CBW80+80.If dot11EHTOptionImplemented is equal to true and the STA is a non-AP STA is not a STA 6G or the STA is an AP is a STA 6G without 320 MHz bandwidth support(#4147), then the allowed values are CBW20, CBW40, CBW80, or CBW160.If dot11EHTOptionImplemented is equal to true and the STA is a non-AP STA that is a STA 6G or the STA is an AP that is a STA 6G with 320 MHz bandwidth support(#4147), then the allowed values are CBW20, CBW40, CBW80, CBW160, or CBW320. |
| DYN\_BANDWIDTH\_IN\_NON\_HT | PHY-RXSTART.request(RXVECTOR) | Not present if neither dot11VHTOptionImplemented nor dot11HEOptionImplemented is present or equal to true.Present if at least one of dot11VHTOptionImplemented and dot11HEOptionImplemented is present and equal to true, then the allowed values are Static or Dynamic. |

***TGbe editor: Modify below paragraphs in 17.3.5.5 (PHY DATA scrambler and descrambler) as follows:***

During reception by a VHT STA, HE STA, or EHT AP STA that is not a STA 6G with 320 MHz bandwidth support(#4147), RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT shall be determined from selected bits in the scrambling sequence as shown in Table 17-7 (Contents of the first 7 bits of the scrambling sequence) and Table 17-9 (RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT values for a VHT or HE STA).

During reception by an EHT non-AP STA that is a STA 6G or an EHT AP that is a STA 6G with 320 MHz bandwidth support(#4147), the RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT shall be determined from selected bits in the scrambling sequence as shown in Figure 17-6 (SERVICE field bit assignment), Table 17-7 (Contents of the first 7 bits of the scrambling sequence), and Table 17-9a (RXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT values for an EHT STA).

***End of change***

-----------------------------------------------------End point of Opt 2-----------------------------------------------------------------