IEEE P802.11
Wireless LANs

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This document proposes resolution to the following CC36 CID in 35.2.1.3 (changes relative to draft 1.3):

6979

Revisions:

* Rev0: Initial version of the document.

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| **CID** | **Page** | **Line** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 6979 | 246 | 4 | 35.2.1.3.3 | Need to clarify limitation on the non-TB PPDU transmitted by the non-AP STA. The non-AP STA shall not transmit larger BW PPDU than CTS frame. (or received TXS MU-RTS Trigger frame) | Please provide rules to set TXVECTOR parameters for the non-TB PPDU. (some rules for TXOP holder are in the 10.23.2.8, but the non-AP STA is not an TXOP holder in this case) | **Revised.** Agree with the commenter. Added text to define the rules for setting the TXVECTOR parameter CH\_BANDWIDTH for the STA addressed by the MU-RTS TXS Trigger frame. **TGbe editor:** please make the changes below in <https://mentor.ieee.org/802.11/dcn/21/11-21-1856-00-00be-cc36-cr-for-cid-6979.docx> |

**Discussion:**

Baseline and 11ax provide rules for setting the TXVECTOR parameter CH\_BANDWIDTH of a TXOP holder in 10.23.2.8 Multiple frame transmission in an EDCA TXOP.

* Baseline rules for setting the TXVECTOR parameter CH\_BANDWIDTH of the TXOP holder (summarized)

Case 1

Protected by an (MU-)RTS or CTS frame carried in a non-HT (duplicate) PPDU

* The same or narrower BW than the BW of the last CTS frame carried in the non-HT (duplicate) PPDU

Case 2

Protected by a CTS-to-self frame carried in a non-HT (duplicate) PPDU

* The same or narrower BW than the BW of the CTS-to-self frame

Case 3

Includes at least one non-HT (duplicate) PPDU and there is no (MU-)RTS/CTS exchange in non-HT (duplicate) PPDU in the TXOP

* The same or narrower BW than the BW of the first non-HT (duplicate) PPDU

Case 4

There is no non-HT (duplicate) PPDU in the TXOP

* The same or narrower BW than the BW of the preceding PPDU

The Shared TXOP is different with the Case 3 and 4 because the first frame of the Shared TXOP is a CTS frame carried in a non-HT (duplicate) PPDU. Therefore, we only need to define rules for setting the TXVECTOR parameter of the PPDUs exchanged in the Shared TXOP for the above Case 1 and 2.

* **PPDU BW of an UL PPDU transmitted during the Shared TXOP**

When the TXOP Sharing Mode subfield of the MU-RTS TXS Trigger frame is set to 1 or 2, a non-AP STA addressed by the MU-RTS TXS Trigger frame may transmit one or more UL PPDUs to its associated AP. In this case, the Shared TXOP is similar to the Case 2 above because the non-AP STA has responded to the MU-RTS TXS Trigger frame with the CTS frame in a non-HT (duplicate) PPDU.

Therefore, the non-AP STA shall transmit an UL PPDU as the same or narrower BW than the BW of the CTS frame that it has responded to the MU-RTS TXS Trigger frame. (Rule-1)

* **PPDU BW of a non-UL(P2P) PPDU transmitted during the Shared TXOP**

When the TXOP Sharing Mode subfield of the MU-RTS TXS Trigger frame is set to 2, a non-AP STA addressed by the MU-RTS TXS Trigger frame may transmit a non-UL PPDU. Before transmitting a non-UL PPDU, the non-AP STA may transmit a RTS frame to the intended recipient of the non-UL PPDU to protect frame exchange sequence(s). For the case of the intended recipient responds with the CTS frame that is carried in a non-HT (duplicate) PPDU, the Shared TXOP is similar to the Case 1. If there is no RTS/CTS frame exchange in the non-HT (duplicate) PPDU between the two non-AP STAs, the case is similar to the Case 2 above because a transmitter of the non-UL PPDU has transmitted the CTS frame in a non-HT (duplicate) PPDU.

Therefore, the non-AP STA shall set BW of the non-UL PPDU as follows:

- To be the same or narrower than that of the last CTS frame it has received from the intended recipient of the non-UL PPDU, if the non-AP STA and the intended recipient of the non-UL PPDU have exchanged RTS/CTS frame carried in a non-HT (duplicate) PPDU within the same Shared TXOP. (Rule-2-1)

- Otherwise, to be the same or narrower than that of the CTS frame that it has responded to the MU-RTS TXS Trigger frame. (Rule-2-2)

* **Preamble puncturing during the Shared TXOP**

*The CTS frame in response to the MU-RTS Trigger frame shall be sent in the RU indicated by the EHT variant User Info field, excluding any punctured 20 MHz subchannel indicated in the Disabled subchannel Bitmap field in the EHT Operation element.* *(D1.2\_35.2.2.2 CTS frame response to an MU-RTS Trigger frame)*

A non-AP STA that has responded to the MU-RTS TXS Trigger frame with the CTS frame carried in a preamble punctured PPDU due to disabled subchannel(s) of the BSS should not occupy the disabled subchannel(s) during the Shared TXOP. A non-AP STA addressed by the MU-RTS TXS Trigger frame can set the TXVECTOR parameter INACTIVE\_SUBCHANNELS of an HE, EHT, or non-HT duplicate PPDU to a member of the EHT BSS as defined in (35.13.2 Preamble puncturing operation).

However, there is no rule for setting the TXVECTOR parameter INACTIVE\_SUBCHANNELS when a non-AP STA is transmitting the PPDU to a STA that is not a member of the same EHT BSS.

It is necessary to define a rule to set the TXVECTOR parameter INACTIVE\_SUBCHANNELS for a non-AP STA that transmits non-TB PPDU(s) during the Shared TXOP. (Rule-3)

**35.2.1.3.3 Non-AP STA behaviour**

***TGbe editor: Please add the following paragraphs at the end of subclause 35.2.1.3.3 Non-AP STA behavior: (#6979)***

A non-AP STA addressed by an MU-RTS TXS Trigger frame shall not transmit non-TB PPDUs occupying subchannels that are not used for responding the CTS frame to the MU-RTS TXS Trigger frame during the time allocated by an associated AP.

A non-AP STA addressed by an MU-RTS TXS Trigger frame shall set the TXVECTOR parameter CH\_BANDWIDTH or CH\_BANDWIDTH\_IN\_NON\_HT of a non-TB PPDU to be the same or narrower than the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT of the CTS frame that it has responded to the MU-RTS TXS Trigger frame.

If a non-AP STA addressed by an MU-RTS TXS Trigger frame has exchanged RTS/CTS frame carried in a non-HT PPDU or a non-HT duplicate PPDU with an intended recipient of a non-TB PPDU, the non-AP STA shall set the TXVECTOR parameter CH\_BANDWIDTH or CH\_BANDWIDTH\_IN\_NON\_HT of the non-TB PPDU to be the same or narrower than the RXVECTOR parameter CH\_BANDWIDTH or CH\_BANDWIDTH\_IN\_NON\_HT of the last received CTS frame from the intended recipient of the non-TB PPDU during the time allocated by an associated AP.

NOTE 1—When a non-AP STA transmits the first RTS frame to an intended recipient of a non-TB PPDU during the allocated time, it transmits the frame with the same or narrower BW than the BW of the CTS frame that it has responded to the MU-RTS TXS Trigger frame.

NOTE 2—When a non-AP STA transmits an UL PPDU after a frame exchange with the other STA, it transmits the UL PPDU with the same or narrower BW than the BW of the CTS frame that it has responded to the MU-RTS TXS Trigger frame.

If a 20 MHz subchannel is indicated as a punctured subchannel in the most recently exchanged Disabled Subchannel Bitmap field 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 the non-TB PPDU(s) that is transmitted during the time allocated by an associated AP.

SP: Do you agree to the resolution provided in doc 11-21/1856r0 for the following CID for inclusion in the latest 11be draft?

- 6979