IEEE P802.11  
Wireless LANs

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| CR for TXS related CIDs | | | | |
| Date: 2023-04-05 | | | | |
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Abstract

This submission proposes resolutions for following CIDs:

16727 16732 17961 18318 16672 15963 17806 18304 17797 17798 15937 15938 15939 15048 17809 16117 16653 16722 16724 16725 17811 15665 15666 15667 15810 15668 16207 15006 15964 16728 18247 17261

Revisions:

* Rev 0: Initial version.

The changes are relative to 11be draft 3.1

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CID | Clause | Page | Comment | Proposed Change | Resolution |
| 16727 |  | 0.00 | "MU-RTS TXS" needs an article before ("an" or "the") and "Trigger frame" after | Fix at 195.27/28, 475.29/32, 475.63, 477.15 | **Accept** |
| 16732 |  | 0.00 | "MU-RTS TXS frame" should be "MU-RTS TXS Trigger frame" | Fix at 195.65, 196.3, 476.3, 477.15 | **Accept** |
| 17961 | 35.2.1.2 | 473.54 | As the STA can access the channel within the shared TXOP obtained by the AP via the Triggered TXOP sharing procedure,why does not the STA need to update its own EDCA parameter to restrict the capability of channel access by EDCAï¼when considering the fairness?(e.g., MU EDCA parameter of OFDMA in 11ax) | as the comment | **Reject**  The spec clarifies that MU EDCA rules may apply to STAs transmitting UL frames within allocated time on par with 11ax UL frame transmissions. Please see the paragraph in P483L7 of draft 3.1. |
| 18318 | 35.2.1.2 | 473.54 | For TXOP sharing, there needs to be a mechanism to indicate the resource allocation duration. | As in comment | **Reject (?)** |
| 16672 | 35.2.1.2.1 | 473.60 | The non-TB PPDU restriction should be applied to the PPDU to the AP only. For the P2P, the requriement can be relaxed. | As in comment | **Revised.**  Clarified that the non-TB PPDU restriction may be only for UL packets to associated AP.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #16672 |
| 15963 | 35.2.1.2.1 | 474.11 | What is STA behavior for NAV resetting if it does not reset NAV after NAVTimeout has expired which was set based on MU-RTS TXS Trigger frame? Also this conflicts with the Note 2 in clause 35.2.1.2.3 (Non-AP STA behavior) where STAs NAV becomes zero based on p2p frames. | Since STAs can anyway reset their NAV based on p2p transmissions of MU-RTS TXS Trigger frame, why do we need this 'should' requirements for STAs which set their NAV based on MU-RTS TXS Trigger frame. Suggest to remove this 'should' requirement or clarify STA behavior if it does not reset NAV. | **Reject.**  If a STA does not reset NAV after NAVtimeout has expired, it respects NAV set by that frame similar to any other Trigger frame (e.g., Basic Trigger frame). The note in 35.2.1.2.3 does not conflict since that only talks about the case when NAV is set by the P2P frames transmitted during allocated time. |
| 17806 | 35.2.1.2.1 | 474.13 | "unless the STA receives a CF-End frame that satisfies the conditions in 26.2.5 (Truncation of TXOP) and 10.23.2.10 (Truncation of TXOP)", this sentence is not necessary. The intension of this paragraph is to aviod an EHT STA to reset its NAV when no frame is received during NAVTimeout period. The case that a CF-End is received is not coverd by NAVTimeout rule. So no exception of CF-End is needed. | remove "unless the STA receives a CF-End frame that satisfies the conditions in 26.2.5 (Truncation of TXOP) and 10.23.2.10 (Truncation of TXOP)" | **Reject.**  The quoted text captures that after NAVtimeout, the STA that sent the TXS frame could send a CF-End frame to reset the NAV at all STAs that have set their NAV from the TXS frame. |
| 18304 | 35.2.1.2.2 | 474.23 | The MU-RTS TXS Trigger frame should be transmitted only by an AP. Delete ", if transmitted by an AP," | As in comment. | **Revised.**  Removed the quoted text in the comment.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #18304 |
| 17797 | 35.2.1.2.2 | 475.08 | The AP may transmit a PPDU after the end of the allocated time if the T\_TXOP-Remaining after the end of the allocated time is not zero, please clarify if this is allowed when the AP sets a Duration/ID field less than the TXOP duration and the TXNAV is zero | As in the comment | **Revised.**  This is already allowed per the current spec text. Added a note for further clarification.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #17797 |
| 17798 | 35.2.1.2.2 | 475.08 | Please clarify how the Duration/ID field of the MU RTS TXS Trigger frame is set when sharing the TXOP with a non-AP STA using Triggered TXOP Sharing Mode 2 | As in the comment | **Reject.**  The Duration/ID field setting follows baseline rules defined in 9.2.5.2 and the rules defined in 35.2.1.2.2. |
| 15937 | 35.2.1.2.2 | 475.27 | Optional CTS-to-self frame is mentioned in the illustration of Figure 35-1; however, the time to transmit this frame is not well described. Moreover, normative text is needed to define IFS time between the optional CTS-to-self frame transmission and the MU-RTS TXS TF. Same comment for Figure 35-2 | Please define the IFS time between the CTS-to-self frame and the MU-RTS TXS TF | **Reject.**  The IFS rule is baseline SIFS spacing followed by frames transmitted by TXOP holder**.** Figures are exemplary and not alltiming details need to be captured (e.g., see Figure 26-1—Example of MU-RTS/CTS/DL MU PPDU/Acknowledgment Response and NAV setting in REVme)) |
| 15938 | 35.2.1.2.2 | 475.27 | Optional CTS-to-self frame is mentioned in the illustration of Figure 35-1; however, the time to transmit this frame is not well described. Moreover, normative text is needed to define IFS time between the optional CTS-to-self frame transmission and the MU-RTS TXS TF. Same comment for Figure 35-2 | Please indicate normative text about the duration value indicated in the CTS-to-self frame; does it indicate the TXOP duration and not the value in the Allocation Duration field in the following MU-RTS TXS TF? | **Reject.**  Figures are exemplary and not normative. In Figure 35-1, the Duration field in the CTS-to-self may protect the entire TXOP or just till the end of the allocation or some time within the allocated time. The rationale behind inclusion of the CTS-to-self is to show an example where the MU-RTS TXS frame need not be the first frame in a TXOP. |
| 15939 | 35.2.1.2.2 | 475.27 | STAs receiving the CTS-to-self frame will set NAV for the duration indicated in this frame. It needs to be mentioned that | Please indicate normative text that a STA identified in MU-RTS TXS TF shall reset its NAV that is set by the CTS-to-self frame. | **Reject.**  This is already captured in P483L16 of 11be draft 3.1 (and in P477L16 of 11be draft 3.0).  “After sending the CTS solicited by MU-RTS TXS frame from the associated AP, the STA that sends the responding CTS shall ignore the NAV that is set by the AP within the time allocation signaled in the MURTS TXS Trigger frame.” |
| 15048 | 35.2.1.2.2 | 475.65 | The discription "transmission of PPDUs by a scheduled STA to another STA within the allocated time" does not align with the figure. | change to "transmission of a PPDU to the AP and a PPDU to another STA by a scheduled STA within the allocated time". | **Accept** |
| 17809 | 35.2.1.2.2 | 476.01 | Change "Figure 35-2 (Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 2)" to "the figure" to shorten the sentence. | as in comment | **Accept** |
| 16117 | 35.2.1.2.2 | 476.02 | The AP should have latitude in how it uses own TXOP. In view of the above, the clause "where the AP transmits to another non-AP STA after PIFS from the end of the allocated time in MU-RTS Trigger TXS frame for STA 1" should clarify the following two points,  (1)Whether "the end of the allocated time in MU-RTS Trigger TXS" also includes a case that an AP receives a frame indicating TXOP Return from a non-AP STA.  (2)Whether an AP may transmit any type of frame or not. | Please clarify these two points. | **Revised.**  Added text to clarify that an AP considers allocation to have ended after receiving the TXOP return signaling. In absence of any restriction, the AP is free to transmit whatever frames its allowed to transmit per baseline rules.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #16117 |
| 16653 | 35.2.1.2.3 | 476.31 | TXS procedure currently allows only one user to communicate in TXS mode 2. However, the procedure may be extended to support multiple users for P2P communication either via time or frequency RU allocation. | Describe a procedure for supporting multiple users. | **Reject.**  The complexity involved in supporting multiple users is better resolved in a future release. |
| 16722 | 35.2.1.2.3 | 476.46 | "received EHT Capabilities element" should be "received an EHT Capabilities element" | As it says in the comment | **Revised.**  Made corresponding text modifications.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #16722 |
| 16724 | 35.2.1.2.3 | 476.53 | "The non-AP EHT STA may use the time allocated by the associated AP in the MU-RTS TXS Trigger frame  with the Triggered TXOP Sharing Mode subfield value equal to 1 only for the transmission of one or more  non-TB PPDUs that are addressed to the AP." -- I think this is actually a shall (it shall use the time only for tx to the AP) | Change "may" to "shall" | **Reject.**  The STA may not transmit any frame within the allocated time. The “only” excludes transmissions of any PPDU other than UL PPDUs to associated AP. |
| 16725 | 35.2.1.2.3 | 477.02 | "A QoS Data frame is transmitted successfully by the STA for an AC  if it requires immediate acknowledgment and the STA receives an immediate acknowledgment for that  frame, or if the QoS Data frame does not require immediate acknowledgment." -- is this changing the existing definition of successful transmission? I assume not | Delete the cited text | **Reject (?)** |
| 17811 | 35.2.1.2.3 | 477.15 | "MU-RTS TXS frame"->"MU-RTS TXS Trigger frame" | check the whole spec to do the same replacement | **Accept (?)** |
| 15665 | 35.2.1.2.3 | 477.16 | "within the time allocation" is to indicate the period that the NAV is ignored, but the sentence has ambiguity to be interpreted as the period that the NAV is set. | Change the sentence to remove ambiguity.  e.g. "the STA that sends the responding CTS shall ignore the NAV within the time allocation signaled in the MU-RTS TXS Trigger frame, if the NAV is set by the AP." | **Revised.**  Revised the text along the lines suggested by the commenter.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15665 |
| 15666 | 35.2.1.2.3 | 477.16 | The description is not clear. "the NAV" here is the STA's NAV that is set based on a PPDU sent by the AP. | Change "the NAV that is set by the AP" to "the NAV that was set based on a PPDU sent from the AP". | **Revised.**  Revised the text along the lines suggested by the commenter.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15665 |
| 15667 | 35.2.1.2.3 | 477.16 | Change "the NAV that is set by the AP" to "the NAV that was set by the AP". | As in comment | **Revised.**  Revised the text along the lines suggested by the commenter.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15665 |
| 15810 | 35.2.1.2.3 | 477.16 | "MU RTS TXS frame"->"MU RTS TXS Trigger frame" | as in comment | **Revised.**  Revised the text along the lines suggested by the commenter.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15810 |
| 15668 | 35.2.1.2.3 | 477.17 | The STA should not ignore the NAV after the STA sent the TXOP return signaling. | Please clarify that the STA can ignore the NAV until the STA transmits the TXOP return signaling, or just remove "signaled in the MU-RTS TXS Trigger frame". | **Revised.**  Clarify that the time allocation ends after STA returns unused TXOP.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15668 |
| 16207 | 35.2.1.3 | 477.17 | the STA not always use all allocated time, should not ignore NAV after TXOP retrun anymore. | the STA shall ignore the NAV during the time period it really used, instead of the time period allocated by AP | **Revised.**  Clarify that the time allocation ends after STA returns unused TXOP.  **TGbe editor:** please implement changes as shown in doc 11-23/0604 tagged as #15668 |
| 15006 |  | 477.20 | not sure what's the two STA means here, I guess both of them are non-AP STA?  the STA shall set the Duration/ID field of its frame(s) to a STA that is not the associated AP | add precondidation "Triggered TXOP Sharing Mode subfield equal to 2," and change STA to non-AP STA | **Reject.**  The sentence already clarifies that the second STA is not the associated AP. |
| 15964 | 35.2.1.2.3 | 477.20 | The first requirement in the paragraph applies only for the MU-RTS TXS Trigger frame with 'Triggered TXOP Sharing Mode subfield equal to 2'. Clarify this is the requirement. | Change to:  "After sending the CTS solicited by an MU-RTS TXS Trigger frame with 'Triggered TXOP Sharing Mode subfield equal to 2, the STA shall set the Duration/ID field of its frame(s) to a STA that is not the associated AP with a value that indicates a time no later than the  ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the  Allocation Duration field of the soliciting MU-RTS TXS Trigger frame." | **Accept.** |
| 16728 | 35.2.1.2.3 | 477.20 | "the STA shall set the Duration/ID field  of its frame(s) to a STA that is not the associated AP with a value that indicates a time no later than" is not clear. I think it's trying to say "the STA shall set the Duration/ID field of frames it sends to peer non-AP STAs to a value that indicates a time no later than" | As it says in the comment | **Reject.**  The current text captures the intention correctly about setting the Duration/ID field of frames not sent to the associated AP. |
| 18247 | 35.2.1.2.3 | 477.20 | For TXOP sharing mode=1 or 2, AP may send an ack frame (which only has RA of non-AP but w/o TA). In this case the Duration/ID field of the ack frame should also be set with a value that indicates a time no later than the ending time of allocated duration  Furthermore, for PPDUs to AP, if UL data does not require the whole allocation duration, it is desirable for the non-AP STA to set data frame NAV ending before the end the allocation duration, so AP may get a heads up for the STA returning the TXOP to schedule next user, and sets NAV in ack accordingly | change to "After non-AP STA sending the CTS solicited by the MU-RTS TXS Trigger frame, the non-AP STA or AP shall set the Duration/ID field  of its frame(s) with a value that indicates a time no later than the ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the Allocation Duration field of the soliciting MU-RTS TXS Trigger frame." | **Reject.**  The behavior described by the commenter is already possible since the Duration/ID field in frames sent by responder AP would be set based on the Duration/ID field in the UL frames sent by the allocated STA; the latter in turn follow the rules described in the cited text. |
| 17261 | 35.2.1.2.3 | 477.21 | "the STA shall set the Duration/ID field of its frame(s) to a STA that is not the associated AP with a value that indicates a time no later than the ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the Allocation Duration field of the soliciting MU-RTS TXS Trigger frame." What does mean here? It means that the STA may set the Duration/ID field to a value which is larger than the ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the Allocation Duration of field of the soliciting MU-RTS TXS Trigger frame? | Please clarify it | **Reject.**  The text already clarifies that the STA may set the Duration/ID field to a value which is ***smaller*** than the ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the Allocation Duration of field of the soliciting MU-RTS TXS Trigger frame. |

***TGbe editor: Please revise 35.2.1.2*** *in draft 3.1* ***as follows):***

**35.2.1.2 Triggered TXOP sharing procedure**

**35.2.1.2.1 General**

The Triggered TXOP sharing procedure allows an AP to allocate a portion of an obtained TXOP to one associated non-AP EHT STA for transmitting one or more non-TB PPDUs to its associated AP and one or more PPDUs to another STA (#16672).

An EHT STA with dot11EHTTXOPSharingTFOptionImplemented equal to true shall set one or both of the following subfields in the EHT Capabilities element to 1: the Triggered TXOP Sharing Mode 1 Support subfield or the Triggered TXOP Sharing Mode 2 Support subfield (see Table 9-401l (Subfields of the EHT MAC Capabilities Information field)).

An EHT STA with dot11EHTTXOPSharingTFOptionImplemented equal to true shall follow the rules defined in 35.2.2 (MU-RTS trigger/CTS frame exchange procedure for EHT STAs) when transmitting or responding to an MU-RTS TXS Trigger frame and the additional rules defined in 35.2.1.2.2 (AP behavior) and 35.2.1.2.3 (Non-AP STA behavior).

An EHT STA that uses information from a received MU-RTS TXS Trigger frame as the most recent basis to update its NAV should not reset its NAV after the NAVTimeout has expired (see 10.3.2.4 (Setting and resetting the NAV)) unless the STA receives a CF-End frame that satisfies the conditions in 26.2.5 (Truncation of TXOP) and 10.23.2.10 (Truncation of TXOP).

**35.2.1.2.2 AP behavior**

An EHT AP may allocate time within an obtained TXOP (see 10.23.2.4 (Obtaining an EDCA TXOP)) to an associated non-AP EHT STA by transmitting an MU-RTS TXS Trigger frame as defined in 9.3.1.22.9 (MURTS Trigger frame format) parameterized as follows:

— The MU-RTS TXS Trigger frame(#18304) shall have only one User Info field that is

not a Special User Info field.

— The User Info field shall be addressed to an associated non-AP STA (i.e., AID12 subfield is set to a

value in the range of 1 to 2006).

— The MU-RTS TXS Trigger frame may contain a Special User Info field as defined in 9.3.1.22.9 (MU-RTS Trigger frame format) and 9.3.1.22.3 (Special User Info field)).

The time allocated to the associated non-AP EHT STA is specified in the Allocation Duration subfield in the MU-RTS TXS Trigger frame.

An EHT AP shall not send an MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield equal to 1 and with the User Info field that is addressed to an associated non-AP STA from which it has not received an EHT Capabilities element with the Triggered TXOP Sharing Mode 1 Support subfield equal to 1.

An EHT AP shall not send an MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield equal to 2 and with the User Info field that is addressed to an associated non-AP STA from which it has not received an EHT Capabilities element with the Triggered TXOP Sharing Mode 2 Support subfield equal to 1.

If the EHT AP determines that its transmission of an MU-RTS TXS Trigger frame to a non-AP EHT STA with the Triggered TXOP Sharing Mode subfield equal to 1 is successful (see 26.2.6.2 (MU-RTS Trigger frame transmission)), then the AP shall not transmit any PPDU within the allocated time specified in the MU-RTS TXS Trigger frame unless one of the following conditions are true:

— The PPDU carries an immediate response that is solicited by the non-AP STA.

— The CS mechanism indicates that the medium is idle at the TxPIFS slot boundary after the end of

either the transmission of an immediate response frame sent to that STA or the reception of a frame from that STA that did not require an immediate response.

If the EHT AP determines that its transmission of an MU-RTS TXS Trigger frame to a non-AP EHT STA with the Triggered TXOP Sharing Mode subfield equal to 2 is successful, then the AP shall not transmit any PPDU within the allocated time specified in the MU-RTS TXS Trigger frame unless one of the following conditions are true:

— The PPDU carries an immediate response that is solicited by the non-AP STA.

— The AP with the TXOP Return Support In TXOP Sharing Mode 2 subfield equal to 1 received a

frame from the non-AP STA containing a CAS Control field with the RDG/More PPDU subfield equal to 0 at which point it considers its time allocation to that STA have ended (#16117).

If the EHT AP determines that the transmission of an MU-RTS TXS Trigger frame is successful and the *TTXOP-REMAINING* (see 9.2.5.2 (Setting for single and multiple protection under enhanced distributed channel access (EDCA))) after the end of the allocated time is not zero, then the AP may transmit a PPDU after the end of the allocated time if any of the following conditions are satisfied:

— The medium is determined to be idle by the CS mechanism at the end of the allocated time in which

case it may transmit PIFS after the end of the allocated time.

— The last PPDU transmitted by the AP ended less than PIFS before the end of the allocated time in

which case it may transmit SIFS after the end of the last PPDU transmission.

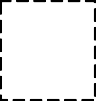
— The last PPDU transmitted by the allocated STA to its associated AP did not contain any MPDU

soliciting immediate acknowledgement from the AP and ended less than PIFS before the end of the allocated time in which case it may transmit SIFS after the end of the last PPDU transmission.

NOTE- An AP that previously sent PPDUs in an obtained TXOP with Duration/ID field less than the TXOP duration may transmit a PPDU within that TXOP after the end of the allocated time if the *TTXOP-REMAINING* after the end of the allocated time is not zero and the medium is determined to be idle (#17797).

If the EHT AP determines that the transmission of the MU-RTS TXS Trigger frame is successful and the CS mechanism indicates that the medium is busy at the end of the allocated time, then the AP might transmit after the CS mechanism indicates that the medium is idle at the TxPIFS slot boundary or invoke the backoff procedure as described in 10.23.2.2 (EDCA backoff procedure).

Figure 35-1 (Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 1 soliciting UL PPDU) shows an example of the exchange of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 1 preceded by an optional CTS-to-self transmission and transmission of UL non-TB PPDUs by a scheduled STA within the allocated time. Additionally, the figure shows the case where the AP transmits to another non-AP STA within the allocated time in MU-RTS TXS Trigger frame and within TxPIFS boundary, since the CS mechanism indicates that the medium is idle after the transmission of the last BlockAck frame to STA 1.



CTS‐to‐

self

PIFS

AP

DATA to another

non‐AP STA

Non‐AP

STA 1

TXOP

Time allocated in MU‐RTS TXS Trigger Frame

DATA to AP

in a non‐TB PPDU

DATA to AP

in a non‐TB PPDU

CTS

response to AP

Block Ack to STA 1

Block Ack to STA 1

MU‐RTS TXS

Trigger Frame (Triggered TXOP Sharing Mode

=1) to STA 1

###### Figure 35-1—Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 1 soliciting UL PPDU

Figure 35-2 (Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 2) shows an example of the exchange of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 2 preceded by an optional CTS-to-self transmission and transmission of a PPDU to the AP and to another STA by a scheduled STA within the allocated time. Additionally, Figure 35-2 (Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 2) shows the case where the AP transmits to another non-AP STA after PIFS from the end of the allocated time in MU-RTS Trigger TXS frame for STA 1.



AP

CTS‐to‐

self

PIFS

Non‐AP

STA 1

Non‐AP STA 2

TXOP

Time allocated in MU‐RTS TXS Trigger Frame

Block Ack to STA 1

DATA to STA 2

DATA to AP in non‐TB PPDU

CTS

response to AP

DATA to another non‐AP STA

Block Ack to STA 1

MU‐RTS TXS

Trigger Frame (Triggered TXOP Sharing Mode

=2) to STA 1

###### Figure 35-2—Example of MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield value equal to 2

**35.2.1.2.3 Non-AP STA behavior**

After a non-AP EHT STA receives an MU-RTS TXS Trigger frame from its associated AP that contains a User Info field that is addressed to it, the STA may transmit one or more non-TB PPDUs within the time allocation signaled in the MU-RTS TXS Trigger frame. The first PPDU of the exchange shall carry a CTS frame transmitted per the rules defined in 26.2.6.3 (CTS frame response to an MU-RTS Trigger frame).

The time allocation shall start when the PHY-RXEND.indication primitive of the PPDU that contains the MU-RTS TXS Trigger frame has occurred.

The non-AP EHT STA may use the time allocated by the associated AP in an MU-RTS TXS Trigger frame, which is addressed to the STA and that has the Triggered TXOP Sharing Mode subfield equal to 2, for the transmission of one or more non-TB PPDUs that are addressed to the AP or to another STA. The non-AP EHT STA that received a MU-RTS TXS Trigger frame with TXOP Sharing Mode subfield equal to 2 may transmit a QoS Data or QoS Null frame containing a CAS Control subfield with the RDG/More PPDU subfield equal to 0 to an associated AP from which it has received an (#16722) EHT Capabilities element with the TXOP Return Support In TXOP Sharing Mode 2 subfield set to 1; following this frame transmission the STA considers its time allocation to have ended after receiving the PPDU carrying immediate response from the AP (#16117, 15668). Otherwise, the STA shall not transmit such frame to its associated AP within the allocated time.

NOTE 1—For example, the STA might use the allocated time to transmit to a peer STA of a peer-to-peer link or might use the allocated time for noninfrastructure network communication. Noninfrastructure communication within the allocated time may use TB PPDUs if supported by participant STAs (#16672).

The non-AP EHT STA may use the time allocated by the associated AP in the MU-RTS TXS Trigger frame with the Triggered TXOP Sharing Mode subfield value equal to 1 only for the transmission of one or more non-TB PPDUs that are addressed to the AP.

A non-AP EHT STA addressed by a User Info field in the MU-RTS TXS Trigger frame shall ensure that its PPDU transmission(s) and any expected responses fit entirely within the allocated time.

A non-AP EHT STA that receives a MU-RTS TXS Trigger frame from its associated AP that contains a User Info field addressed to the STA shall update its CWmin[AC], CWmax[AC], AIFSN[AC], and MUEDCATimer[AC] state variables to the values contained in the dot11MUEDCATable, for all the ACs from which at least one QoS Data frame was transmitted successfully in a non-TB PPDU to the AP within the time allocated in the Trigger frame. A QoS Data frame is transmitted successfully by the STA for an AC if it requires immediate acknowledgment and the STA receives an immediate acknowledgment for that frame, or if the QoS Data frame does not require immediate acknowledgment.

If the last non-TB PPDU transmitted to its associated AP within the time allocated in an MU-RTS TXS Trigger frame contains at least one QoS Data frame for an AC that requires immediate acknowledgment, the updated MUEDCATimer[AC] for that AC shall start at the end of the immediate response. If the last transmitted non-TB PPDU to its associated AP does not contain any QoS Data frames for an AC that requires immediate acknowledgment, the updated MUEDCATimer[AC] for that AC shall start at the end of the non-TB PPDU.

After sending the CTS solicited by MU-RTS TXS frame from the associated AP, the STA that sends the responding CTS shall ignore the NAV within the time allocation signaled in the MU-RTS(#15810) TXS Trigger frame that was set based on a PPDU sent from the AP (#15665).

After sending the CTS solicited by the MU-RTS TXS Trigger frame, the STA shall set the Duration/ID field of its frame(s) to a STA that is not the associated AP with a value that indicates a time no later than the ending time of the PPDU carrying the MU-RTS TXS Trigger frame plus the allocated time duration in the Allocation Duration field of the soliciting MU-RTS TXS Trigger frame. Within the allocated time by an MU-RTS TXS Trigger frame with Triggered TXOP Sharing Mode subfield equal to 2, the addressed STA by the MU-RTS TXS Trigger frame may transmit QoS Data frames, Management frames and the frames that assists the transmission of QoS Data frames and Management frames, e.g., RTS frame, the frames for sounding.

NOTE 2—With the Duration rule defined here, the basic NAV of any STA in the same BSS that receives these frames might become zero only at the end of the allocated time if the basic NAV timer is set per the P2P transmission frames during the allocated time period. Hence, these STAs can transmit in the remaining TXOP after the allocated time period due to a zero basic NAV value.

A non-AP STA addressed by an MU-RTS TXS Trigger frame with the triggered TXOP sharing mode equal to 2 may either perform PIFS recovery within the allocated time or perform a backoff within the allocated time when the non-TB PPDU transmission is not successful. How it chooses among these options is implementation dependent.

During the time allocated by an associated AP using an MU-RTS TXS Trigger frame, a non-AP STA addressed by the MU-RTS TXS Trigger frame shall not transmit non-TB PPDUs occupying subchannels that are not used when sending the CTS frame in response to the MU-RTS TXS Trigger frame.

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