IEEE P802.11
Wireless LANs

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| CR for TXOP retrun in MU-RTS TXS |
| Date: 2022-08-04 |
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Abstract

This submission proposes comment resolution(s) for the following 10 CID(s) received in LB266 on TGbe D2.1 related to 35.2.1.2 Triggered TXOP sharing procedure

CIDs:

12421, 12502, 14024, 12503, 11020, 14026, 13772, 14031, 13989, 11487, 11486

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: add CID 11020
* Rev 3:
	+ add CID 11486
	+ Pending CID 13989, 11486

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| **CID** | **Commenter** | **Clause**  | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 12421 | Yongho Kim | 35.2.1.2.3 | 402.30 | To improve efficiency of triggered TXOP Sharing feature, it's needed to allow reverse direction(RD) between non-AP STA and non-AP STA. In mode 1, RDG/More PPDU is used to indicate to terminate TXOP sharing. However, when RD is used this bit can be used for RD. More data bit or More data bit with RDG/More PPDU bit shall be used for this purpose. | Please make the following changes to allow reverse direction.During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs to the AP or another STA if the TXOP Sharing Mode subfield value is 2. The non-AP EHT STA may become a RD initiator during the TXOP sharing allocation. The non-AP EHT STA may transmit a QoS Data or QoS Null frame to an associated AP to terminate the allocated time, if both the More Data subfield in frame control field is 0 and the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field is equal to 0.NOTE 1--For example, the other STA can be a peer STA of a peer-to-peer link.During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs and only to its associated AP if the TXOP Sharing Mode subfield value is 1. The non-AP EHT STA may become a RD initiator during the TXOP sharing allocation. | Rejected.There is a lack of motivation to support RDG in MU-RTS TXS, especially due to the potential complexity.1. For mode 1, RDG is not needed. Since the original TXOP holder is an AP, we don’t need a non-AP STA to transfer the control to the AP through RDG, in addition, TXOP return also works.
2. For mode 2, if STA1 transfers the AP’s TXOP to STA2, it will cause a fairness issue especially as STA2 is not associated with the AP. Another problem is that when STA 2 is not associated with the AP, STA 2 may set the basic NAV by the AP, so it can not accept the STA 1’s RDG.
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| 12502 | Jeongki Kim | 35.2.1.2.2 | 400.62 | Was the HE variant HT Control field included in the received frame? Not clear. Clarify it. | change "if the RDG/More PPDU subfield in the CAS Control subfield of the HE variant HT Control field is set to 0" to "if the RDG/More PPDU subfield in the CAS Control subfield of the HE variant HT Control field of the frame is set to 0" | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 12502 |
| 14024 | kaiying Lu | 35.2.1.2.2 | 400.61 | Change "if the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field is equal to 0." to "with the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field equal to 0 " | As in comment. | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 12502 |
| 12503 | Jeongki Kim | 35.2.1.2.3 | 402.42 | "The non-AP EHT STA may transmit a QoS Data or QoS Null frame to an associated AP to terminate the allocated time, if the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field is equal to 0" is weird and should be re-written. | Change it to "The non-AP EHT STA may transmit a QoS Data or QoS Null frame to an associated AP to terminate the allocated time, in which case the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field of the frame is equal to 0" | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 12503 |
| 11020 | Hanqing Lou | 35.2.1.3 | 402.43 | the sentence after "if" is what a STA may set to terminate the allocation but not an "if" condition. May rewrite to make it clear | change to "The non-AP EHT STA may set the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field to 0 in a QoS Data or QoS Null frame to an associated AP to terminate the TXOP sharing allocation." | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 12503 |
| 14026 | kaiying Lu | 35.2.1.2.3 | 402.43 | Change "if the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field is equal to 0." to "with the RDG/More PPDU subfield in CAS Control subfield of the HE variant HT Control field equal to 0 " | As in comment. | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 12503 |
| 13772 | Yuchen Guo | 35.2.1.2.3 | 402.43 | "return the unused time" seems better than "terminate the allocated time" as the capability field name is "TXOP return support blabla" | Replace "terminate the allocated time" with "return the unused time". | RevisedAgree with the commenter.TGbe editor to make changes in 11-22/1263r3 under CID 13772 |
| 14031 | kaiying Lu | 35.2.1.2.2 | 400.13 | AP behavior after the TXOP return should be defined. | As in comment. | RejectedThe paragraph at P400L57 of 802.11be draft 2.1 already clarifies that an AP is allowed to do the transmission after the TXOP return occur. No additional behavior is needed.*“**If the EHT AP determines that its transmission of an MU-RTS TXS Trigger frame to a non-AP EHT STA with the (#12943)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:**—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 set to 1 received a frame from the non-AP STA, if the RDG/More PPDU subfield in the CAS Control subfield of the HE variant HT Control field is set to 0.**“* |
| 13989 | Geonjung Ko | 35.2.1.2.3 | 402.44 | Need a restriction that the TXOP return signaling may be sent when the TXOP Sharing Mode subfield is equal to 2. | As in comment | RevisedThe TXOP return signaling can be used in both Mode 1 and Mode 2. The signaling and rules are exactly the same.The benefit of explicitly signaling the return is that the AP can receive the return signaling early, instead of waiting for more PIFS time (of CCA idle) to understand the return.The proposed resolution is to clarify that the TXOP return can also be used in Mode 1.TGbe editor to make changes in 11-22/1263r4 under CID 13989 |
| 11487 | Xiaofei Wang | 9.2.4.6.1 | 122.09 | It is better to use More Data bit to siganl the end of MU-RTS TXS. It is true that there was some disagreement on the previous proposal, however, some of the disagreement was on changing the name for the bit. Use More Data bit is a cleaner solution compared to the current solution because it aligns better with the original purpose of the bit. | as in comment | Rejected.While it is correct that the use of a More Data bit in the Frame Control field is an alternative way for the signaling, the majority of 802.11be members prefer the current signaling in the A-control based on the feedback received from offline discussion.The concerns that were received during the offline discussion include: 1) we need to reverse the meaning of the More Data bit. Currently the More Data bit is reserved and set to 0, so it nees to be set to 1 to indicate the TXOP return, which is the opposite of the literal meaning of this bit; 2) Some members are sensitive to do the signaling in the Frame Control field. |
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**Proposed spec text**

***TGbe editor: Please make the following changes in subclause 35.2.1.2.2 (AP behaviour):***

If the EHT AP determines that its transmission of an MU-RTS TXS Trigger frame to a non-AP EHT STA with the 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:

—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.

—The AP with the TXOP Return Support In TXOP Sharing Mode 1 subfield equal to 1 received a frame from the non-AP STA containing a CAS Control subfield with the RDG/More PPDU subfield equal to 0. (#13989)

If the EHT AP determines that its transmission of an MU-RTS TXS Trigger frame to a non-AP EHT STA with the 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:

—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, in which case the RDG/More PPDU subfield in the CAS Control subfield of the HE variant HT Control field of the frame (#12502) is set to 0.

***TGbe editor: Please make the following changes in subclause 35.2.1.2.3 (Non-AP STA behaviour):***

During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs to the AP or another STA if the TXOP Sharing Mode subfield value is 2. (#13989)

The non-AP EHT STA may transmit a QoS Data or QoS Null frame to an associated AP to return the remaining (#13772) allocated time, in which case (#12503) the RDG/More PPDU subfield in the CAS Control subfield of the HE variant HT Control field of the frame (#12503) is equal to 0.

During the time allocated by an associated AP, the non-AP EHT STA may transmit non-TB PPDUs and only to its associated AP if the TXOP Sharing Mode subfield value is 1.

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| 11486 | Xiaofei Wang | 9.2.4.6.1 | 122.09 | The definition is not correct since if a STA has been the target STA in a MU-RTS TXS Trigger frame, it doesn't mean the value 0 always means it is the last transmission by that STA, rather it is the last transmission by the STA in the MU-RTS shared Txop | please correct this meaning in Table 9-17 | RevisedAgree with the commenter. “within the allocated time” is added for clarification.TGbe editor to make changes in 11-22/1263r4 under CID 11486 |

***TGbe editor: Please make the following changes in Table 9-17 (RDG/More PPDU subfield values):***

Table 9-17—RDG/More PPDU subfield values

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| Value | Role of transmitting STA | Interpretation of value |
| 0 |

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| --- |
| Neither an RD responder nor a tar­get STA in a MU-RTS TXS Trigger frame |

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| --- |
| No reverse grant |

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| RD responder |

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| --- |
| The PPDU carrying the frame is the last transmission by the RD responder |

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| Target STA in a MU-RTS TXS Trigger frame |

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| The PPDU carrying the frame is the last transmission by the target STA in a MU-RTS TXS Trigger frame within the allocated time (#11486) |

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| 1 |

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| RD initiator |

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| An RDG is present |

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| RD responder or the target STA in a MU-RTS TXS Trigger frame |

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| The PPDU carrying the frame is followed by another PPDU |

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