IEEE P802.11
Wireless LANs

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| LB266: CR for R-TWT backoff procedures |
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Abstract

This submission proposes resolution for CIDs 10686, 10903, 11112, 12287, 12341, 12463, 13036, 13307 received in LB266 (11be D2.0).

***TGbe editor: The baseline for this document is 11be D2.3***

**Revisions:**

* Rev 0: Initial version of the document.

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.

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| **CID** | **Clause** | **Pg/Ln** | **Comment** | **Proposed Change** | **Resolution** |
| 13036 | 35.9.4.1 | 512.15 | Limiting the rule mentioned in the second sentence to "not a member" complicates the rule and also may give chance to a r-TWT member STA to occupy the SP time ahead of other member STAs. | Consider removing the qualifier "not a member" or any appropriate rule to improve. | **Revised**Agree in principle. Per the suggestion of the commenter, we update the rule which is consistent with previous motions and recent Motion 439 in 11-22/1038r18TGbe editor, please implement changes as shown in 2172r0 tagged as **13036** |
| 10686 | 35.9.4.1 | 512.18 | While non member STA will restart a new backoff, what about the member STA? | need to define the behavior of member STA | **Revised**Agree in principle. We update the rule which is consistent with previous motions and recent Motion 439 in 11-22/1038r18TGbe editor, please implement changes as shown in 2172r0 tagged as **13036** |
| 13307 | 35.9.4.1 | 512.12 | The second sentence in this SC is inconsistent with the first sentence, and should be rephrased. As per the first sentence, all r-TWT supporting STAs need to defer transmission if frame exchange cannot be finished before the start of upcoming r-SP. However, the second paragraph, as it is written, conveys that only non-member STAs of upcoming r-SP need to do so and generate a new BO. Only the generation of new BO value rule applies to non-member STAs, and the deferring of transmission rules applies to all r-TWT supporting STAs as per motions passed. | Please revise second sentence to fix inconsistency, as described in comment. | **Revised**Agree in principle. The first sentence applies to all non-AP EHT STAs that support R-TWT (members/non-members) to end the TXOP before the start time of R-TWT SP. We revise the second sentence based on the suggestion of the commenter. TGbe editor, please implement changes as shown in 2172r0 tagged as **13307** |
| 12341 | 35.9.4.1 | 512.12 | This sentence is inconsistent with the previous sentence. The previous sentence says a non-AP EHT STA (including rTWT member STA or non-menber STA) shall end before the start of any rTWT SP. But this sentence emphasizes only the non-menber STA shall check if there is enough time for the frame exchange | As in comment | **Revised**The first sentence applies to all non-AP EHT STAs that support R-TWT (members/non-members) to end the TXOP before the start time of R-TWT SP. We revise the second sentence based on the suggestion of the commenter. Same resolution as CID **13307**.TGbe editor, please implement changes as shown in 2172r0 tagged as **13307** |
| 10903 | 35.9.4.1 | 512.12 | Though an STA that there is not enough time to transmit before the start time of r-TWT SP defers transmission by selecting a random backoff count using the present CW, there might have a chance that the backoff counter would be 0 before the start time of r-TWT SP (e.g., STA chooses 0 for the value of the backoff randomly). It should be clarified whether the STA needs to perform the backoff procedure again or TGbe should define a mechanism that prohibits frame exchange before the start time of r-TWT SP for that case. | For instance, a mechanism as shown below should be defined;"If there is not enough time, then the STA shall defer transmission until the end of the quiet period of r-TWT SP and selects a random backoff count using the present CW." | **Rejected**Per the current rule, in the scenario described by the commenter, an R-TWT scheduled STA will restart the RBO again since there is not enough time for transmission before the start time of the R-TWT SP and hence no further changes are needed. |
| 12287 | 35.9.4.1 | 512.12 | Though an STA that there is not enough time to transmit before the start time of r-TWT SP defers transmission by selecting a random backoff count using the present CW, there might have a chance that the backoff counter would be 0 before the start time of r-TWT SP (e.g., STA chooses 0 for the value of the backoff randomly). It should be clarified whether the STA needs to perform the backoff procedure again or TGbe should define a mechanism that prohibits frame exchange before the start time of r-TWT SP for that case. | if there is not enough time then the STA shall defer transmission until the end of quiet period of t-TWT SP and selects a random backoff count using the present CW | **Rejected**Per the current rule, in the scenario described by the commenter, an R-TWT scheduled STA will restart the RBO again since there is not enough time for transmission before the start time of the R-TWT SP and hence no further changes are needed. |
| 12463 | 35.9.4.1 | 512.19 | If an EHT STA does not have enough time to transmit an MPDU that ends before the r-TWT start it "shall defer transmission by selecting a random backoff count using the present CW". This means that most likely the EHT STA will try to access the channel during the r-TWT regardless of whether it is a member or not. This may cause excessive contention since several EHT STAs would do the same. It would be better to have a mechanism to allocate channel access to these STAs, either after the r-TWT SP or during but with lower priority as the R-TWT SP members. | Define mechanism that allows EHT STAs non-members of r-TWT SPs, that have gained channel access before the r-TWT start but cannot send the MPDU because of insufficient time before the r-TWT start, to get a scheduled channel access either after the r-TWT SP, or during the r-TWT SP with lower priority than the r-TWT members. The commenter is willing to participate in resolution. | **Rejected**EHT STAs that support R-TWT can still contend the medium during the R-TWT SP. The cited rule is to help avoid collision at the start of the R-TWT SP. |
| 11112 | 35.9.4.1 | 512.14 | Since the PHY really doesn't support stopping partway through an AMPDU, "MPDU" is probably wrong in "Before starting transmission of any MPDU, " | Try "Before starting transmission of any PPDU or determining the Duration field in any MDPU therein," | **Rejected**MAC handle the contention and initiation and responses. Hence, no further changes are needed since MAC can handle the required behavior. |

### Discussion:

This contribution proposes a resolution based on recent Motion 439 in 11-22/1038r18, TGbe agreed to not allow R-TWT member STA to continue its TXOP at the start time of the R-TWT SP if the R-TWT member STA transmits the traffic of R-TWT TIDs during the TXOP after the R-TWT SP starts. The approved resolution for CIDs 10694, 10731, 12076, 13830 in Motion 439 was: "When a member STA is allowed to do so, AP won’t be able to utilize the SP efficiently to deliver DL/UL to multiple member STAs when possible. This lowers the efficiency of the R-TWT utilization. Also, it’s recommended not to transmit outside of a TWT SP. When a member STA is allowed to do so, AP won’t be able to utilize the SP efficiently to deliver DL/UL to multiple member STAs when possible. This lowers the efficiency of the R-TWT utilization. Also, it’s recommended not to transmit outside of a TWT SP. In summary, the proposed change would complicate the rule unnecessarily."

***TGbe editor: Please modify the following paragraph as follows:***

**35.8.4 Channel access rules for R-TWT SPs**

**35.8.4.1 TXOP and backoff procedures rules for R-TWT SPs (#10686, #11112)**

A non-AP EHT STA with dot11RestrictedTWTOptionImplemented set to true as a TXOP holder shall ensure the TXOP ends before the start time of (#12691)(#13058)any active (#11109)R-TWT SPs that are advertised by its associated AP or the AP corresponding to the transmitted BSSID in a multiple BSSID set in which its associated AP belongs to, as specified in 35.8.3 (R-TWT SPs announcement(#10893)(#11109)). (#13307) In addition, before starting transmission of any MPDU, a non-AP EHT STA with dot11RestrictedTWTOptionImplemented set to true that is not a TXOP responder (#13036)shall check if there is enough time for the frame exchange to complete prior to the start of the R-TWT SP and, if there is not enough time(#11113), then the STA shall defer transmission by selecting a random backoff count using the present CW (without advancing to the next value in the (#11114)sequence). The QSRC[AC] for the MSDU or A-MSDU (#11115)is not affected.