IEEE P802.11  
Wireless LANs

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| **CIDs for: Section 10.24.10**  **Block Ack/GCR block ack** |
| **Date:** 2016-07-11 |

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Abstract

Revision 0:

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs:

* 22, 23, 24, 136, 414, 415, 587, 694, 21, 1213, 2615, 1442, 1443, 1756, 1769, 2231

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 TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

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| **CID** | **Commenter** | | **PP.LL** | **Comment** | **Proposed Change** | **Resolution** |
| 22 | Ahmadreza Hedayat | | 47.01 | This text "... and then sends a MU-BAR to group member 3. After receiving the BlockAck frame from GCR group member 3" implies that MU-BAR frame should be used for one STA, while the AP can either use MU-BAR or BAR to request BAR from STAA3 (it's more efficient in fact to use BAR). | Either revise the text to express that AP can send either of MU-BAR or BAR to STA3. Or revise the figure to e.g. have STA4 where the AP sends the second MU-BAR to STA3 and STA4. | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 23 | Ahmadreza Hedayat | | 47.24 | "After completing the BlockAckReq and BlockAck frame exchanges or the MU-BAR and BlockAck frame exchanges," | Suggestion: "After completing the BlockAckReq and/or MU-BAR and the respective BlockAck frames exchanges ...” | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 24 | Ahmadreza Hedayat | | 47.55 | "If the beginning of such reception does not occur during the first slot time following a SIFS in case of a BlockAckReq frame or a [TBD IFS] in case of an MU-BAR," | "If the beginning of such reception does not occur during the first slot time following a SIFS," | Accepted  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 136 | Alfred Asterjadhi | | 64.45 | Multiple sentences of this subclause are not related to GCR blockack. Ensure that all changes to this subclause are consistent with the MU BAR variant of the Trigger frame. Clearly specify when this frame is sent instead of the baseline BAR frame. | As in comment. | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 414 | Brian Hart | | 46.56 | acknowledge | report (a status of not received is not acknowledging, to my mind) | Accepted |
| 415 | Brian Hart | | 47.08 | For clarity, add a non-HE STA also | As in comment | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 587 | EVGENY KHOROV | | 47.55 | Replace TBD IFS with SIFS | Replace TBD IFS with SIFS | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 694 | Jae Seung Lee | | 47.55 | TBD IFS | Remove the TBD. | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 21 | Ahmadreza Hedayat | | 46.46 | The originator may send a MU-BAR frame (MU-BAR Trigger variant of UL-Trigger Frame) to one or more of the HE STAs that have a GCR block ack agreement for this group address. Upon reception of the BlockAck frame, an originator may send a MU-BAR frame to other one or more HE STAs that have a block ack agreement for this group address, and this process may be repeated multiple times. This sentence restricts the MU-BAR frame to GCR or to the STAs that have block-ack agreement for a group address, while an AP might send MU-BAR frames to GCR STAs and other STAs to combine the BAs in one UL MU PPDU. | Revise the text so that the exclussive use of MU-BAR for GCR STAs is removed. | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 1213 | Liwen Chu | | 46.46 | "The originator may send a MU-BAR frame (MU-BAR Trigger variant of UL-Trigger Frame) to one or more of the HE STAs that have a GCR block ack agreement for this group address"  Add the condition when MU-BAR can be used. | As in comment. | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 2615 | Young Hoon Kwon | | 47.55 | [TBD IFS] should be SIFS. | Delete "in case of a BlockAckReq frame or a [TBD IFS] in case of an MU-BAR". | Accepted. |
| 1442 | Mark RISON | | 47.02 | "After receiving the BlockAck frame from GCR group member 3, the HE AP determines whether any A-MSDUs need to be retransmitted and sends additional A-MSDUs (some of which might be retransmissions of previous A-MSDUs) using the GCR block ack retransmission policy." -- this is not shown in the figure | Add to the figure | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 1443 | Mark RISON | | 47.42 | "An originator may also regularly send an MU-BAR frame" -- how regularly? | Delete "regularly" | Accepted |
| 1756 | Peter Loc | | 47.55 | STA's response to an MU-BAR is at SIFS, not TBD IFS. | MU-BAR is one of the trigger frame variants, the response is SIFS after receiving MU-BAR. Replace the TBD IFS with SIFS | Revised.  TGax Editor: make changes according to document: 11-16-0829-00-00ax-Section-10.24.10-GCR-Block-Ack. |
| 1769 | | Po-Kai Huang | 47.53 | SIFS separation for response to Trigger frame has been agreed. Hence, the added sentence is not required anymore. | Propose to remove the added sentence. "If the beginning of such reception does not occur during the first slot time following a SIFS, then ..." | Accepted |
| 2231 | | Tomoko Adachi | 47.54 | It says "If the beginning of such reception does not occur during the first slot time following a SIFS in case of a BlockAckReq frame or a [TBD IFS] in case of an MU-BAR, then..." A BlockAck frame should be transmitted SIFS after an MU-BAR, so the recovery procedure is nothing different from the ordinary BlockAckReq frame. | Delete the part "in case of a BlockAckReq frame or a [TBD IFS] in case of an MU-BAR" from the sentence. | Accepted |

## 10.24 Block acknowledgment (block ack)

### GCR block ack

TGax editor: Insert the subclause title as follows:

#### 10.24.10.3 GCR block ack BlockAckReq and BlockAck frame exchanges

Insert the following sentences at the end of 2nd paragraph of section 10.24.10.3:

If the originator has a GCR block ack agreement with one or more of the HE STAs for this group address,the originator may send a MU-BAR frame (MU-BAR Trigger variant of UL-Trigger Frame) to one or more of the HE STAs (#1213). Upon reception of the BlockAck frame from one or more the HE STAs, the originator may send a MU-BAR frame to other one or more HE STAs that have a block ack agreement (#21), and this process may be repeated multiple times (#136).

Insert the following sentences at the end of 4th paragraph of section 10.24.10.3:

When HE STA receives a MU-BAR frame with User identifier field set to the AID of the HE STA, the HE STA shall transmit BlockAck frame in the indicated resource unit SIFS after the Trigger frame. The BlockAck frames report (#414) the HE STA’s reception status of the block of group addressed frames requested by the MU-BAR frame.

Insert the following sentences and a picture at the end of 5th paragraph of section 10.24.10.3:

Figure 10‑9 (Example of a frame exchange with GCR block ack retransmission policy) shows another example of a frame exchange when the GCR block ack retransmission policy is used. The HE AP sends several A-MSDUs using the GCR block ack retransmission policy. The HE AP then sends a MU-BAR to group member 1 and 2 of the GCR group, waits for the BlockAck frames, and then sends a MU-BAR to group member 3 and 4. If there is a non-HE STA in the GCR group, such as GCR group member 5, the HE AP may send a BAR frame for the non-HE STA and waits for the Block Ack frame (#22, 1442). After receiving the BlockAck frames(#22, 1442), the HE AP determines whether any A-MSDUs need to be retransmitted and sends additional A-MSDUs (some of which might be retransmissions of previous A-MSDUs) using the GCR block ack retransmission policy.



Figure 10‑9 - Example of a frame exchange with GCR block ack retransmission policy (#22, 415, 1442)

Change the following sentences in 6th paragraph of section 10.24.10.3:

After completing the BlockAckReq or MU-BAR and BlockAck frame exchanges (#23), the originator determines from the information provided in the BlockAck bitmap and from the missing BlockAck frames which, if any, A-MSDUs need to be retransmitted.

Change the following sentences in 7th paragraph of section 10.24.10.3

An originator adopting the GCR block ack retransmission policy for a GCR group address chooses a lifetime limit for the group address. The originator may vary the lifetime limit for the group address at any time and may use different lifetime limits for different GCR group addresses. The originator transmits and retries each A-MSDU until the appropriate lifetime limit is reached or until each one has been received by all group members to which a BlockAckReq frame or an MU-BAR frame has been sent, whichever occurs first.

Insert the following sentences at the end of 8th paragraph of section 10.24.10.3

An originator may also (#1443) send an MU-BAR frame with User identifier field set to AIDs of HE STAs that transmit the BlockAck frames and the Block Ack Starting Sequence Control subfield set to the Sequence Number field of the earliest A-MSDU of the GCR stream that has not been acknowledged by all group members and has not expired due to lifetime limits, in order to minimize buffering latency at receivers in the GCR group.

Change the following in 12th paragraph of section 10.24.10.3

If the beginning of such reception does not occur during the first slot time following a SIFS (#24, 587, 694, 1756, 1769, 2615, 2231), then the originator may perform error recovery by retransmitting a BlockAckReq frame or an MU-BAR PIFS after the previous BlockAckReq frame or an MU-BAR frame when both of the following conditions are met:

* The carrier sense mechanism (see 10.3.2.1 (CS mechanism)) indicates that the medium is idle at the TxPIFS slot boundary (defined in 10.3.7 (DCF timing relations)) after the expected start of a BlockAck frame, and
* The remaining duration of the GCR TXOP is longer than the total time required to retransmit the GCR BlockAckReq frame or an MU-BAR frame plus one slot time.