IEEE P802.11  
Wireless LANs

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| LB 200 Comment Resolution for Clause 9.22 | | | | |
| Date: 2014-03-01 | | | | |
| Author(s): | | | | |
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Abstract

This submission proposes resolutions for comments in clause 9.22 of TGah Draft 1.0 with the following CIDs:

1215, 1216, 1502, 2275, 1217, 1503, 1504, 1218, 1219, 1220, 1221, 1222, 1223, 1505, 1224, 1506

Revisions:

Rev 0 – Initial version of the document

Rev 1 – Clarifications added and highlighted in yellow (based on feedback received on 04/12/14 conference call)

Rev 2 – Added clarifications related to optionality of BAT frame generation limited to TWT SP.

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

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

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

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| **CID** | **P.L** | **Clause** | **Comment** | | **Proposed Change** | | **Resolution** | |
| 1215 | 176.38 | 9.22.1 | " shall use NDP BlockAck frame unless the Block Ack response is required to include information that is not present in the fields of the NDP BlockAck frame."  A shall statement needs to be more precise. | | Enumerate the information that "is required" and when it is required that forces non-NDP. | | Revised –  Agree in principle with the commenter. Proposed resolution is to remove this paragraph and clearly indicate the cases when different types of BlockAck frames are used in subclause 9.22.2.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1216 | 176.46 | 9.22.1 | " cannot satisfy data selection rules for control response frames" -- but control response frames do not carry data. Also, these are rules, so we have a curiously recursive statement. | | Replace with " cannot otherwise satisfy rate selection rules for control response frames" | | Revised –  Agree in principle with the commenter. Proposed change solves this issue.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1502 | 176.38 | 9.22.1 | The sentence added after the 2nd paragraph of 9.22.1 is redundant because a similar description (and more precise) can be found in the following subclause: "If the intended recipient is capable of participating in an Immediate Block Ack session, the S1G originator shall set the Block Ack Action field value to NDP ADDBA Request, unless another type of Block ACK response frame is required to include information that is not present in the fields of the NDP BlockAck frame, indicating that the recipient STA should use only NDP BlockAck frames during the Block Ack session." | | Remove the following sentence added after the 2nd paragraph of 9.22.1: "When dot11S1GOptionImplemented is true, a STA shall support NDP BlockAck frame and shall use NDP BlockAck frame unless the Block Ack response is required to include information that is not present in the fields of the NDP BlockAck frame." | | Revised –  Agree with the commenter. Proposed resolution accounts for the suggestion.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 2275 | 179.15 | 9.22 | The description of the process of generation and transmission of BlockAck by an HT STA does not include a mechanism to allow for a sufficiently low false positive rate for the NDP Block ACK. | | A mechanism to achieve a low false positive rate for the NDP BlockAck frames should be included after the paragraph ending on line 15 | | Revised –  Agree in principle with the commenter. However this type of mechanism is already added in the proposed resolutions for subclause 8.3.5.1.5 by document 13/1427r0.  TGah editor to make the changes under the heading of the CIDs in 13/1427r2. | |
| 1217 | 177.34 | 9.22.2 | Defining NDP and BAT ADDBA Response frames as a means of communicating the type of MPDU to use for the BlockAck frames is bizarre and unecessary. | | Delete NDP and BAT ADDBA Response frames. Add a field to the ADDBA Response frame "PPDU format" that carries this information. | | Revised –  Adding a field to the ADDBA Response frame is not sufficient because also the ADDBA Request and DELBA frames need similar signalling. Also the Block Action field has hundreds of reserved values, the use of which is more efficient than adding additional fields to these frames.  Proposed resolution is to clearly describe when these ADDBA frames are used.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1503 | 177.40 | 9.22.2 | Some simple rephrasing to eliminate redundancy and specify that NDP BlockAck is (>=2MHz) is proposed in the resolution of this comment. | | Replace this sentence: "This value is 8 for NDP BlockAck (1 MHz) frames as described in 8.3.5.1.5 (NDP BlockAck) and 16 for NDP BlockAck (2 MHz) frames as described in 8.3.5.1.5 (NDP BlockAck)." with the following sentence: "This value is 8 for NDP BlockAck (1 MHz) frames and 16 for NDP BlockAck (>=2 MHz) frames as described in 8.3.5.1.5 (NDP BlockAck)." | | Revised –  Agree in principle with the commenter.Proposed resolution accounts for suggested change.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1504 | 177.51 | 9.22.2 | The Originator Parameter field is added to the description of ADDBA Req/Resp frames between HT STAs. However it should be for S1G STAs | | Clarify that the Originator Parameter field is included in an exchange between S1G STAs only. | | Revised –  Agree in principle with the commenter. Proposed change is included in this resolution. In addition we clarify that the Originator Parameter is included only in ADDBA Response frames.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1218 | 178.02 | 9.22.6 | "includes the additional NDP BlockAck variants (1MHz or ?2MHz) and BAT." -- incomplete | | " .. and the BAT BlockAck variants." | | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested change.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1219 | 178.24 | 9.22.7.3 | In what sense can one add a fragment number (in the range 0-15) to a sequence number (in the range 0 to 4096)? In what sense does this not break HT immediate operation? | | Define the operation of "+" between a sequence number and a fragment number. Make the changes specific to S1G.  Ditto at 178.53. | | Revised –  The operation on sequence numbers is already defined in 9.22.1: “All operations on sequence numbers are performed modulo 212.” Proposed resolution is to specify that FN is equal to 0 except in a MPDU of an A-MPDU carried in an S1G PPDU. BA operation does not break because FN simply provides an offset to WinEndO helping the S1G recipient synch its BlockAck win parameters with those of the Originator.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1220 | 178.39 | 9.22.7.3 | "Note2- Fragmentation is notallowed during an HT-immediate Block Ack agreement with NDP BlockAck. All MPDUs generated during HT-immediate Block Ack with NDP BlockAck shall have the Fragment Number .."  Notes don't have "shall's" in them. | | Remove normative language or promote NOTE to body text. | | Revised –  Agree in principle with the commenter. Proposed resolultion is to remove normative language from the NOTE.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1221 | 178.40 | 9.22.7.3 | "shall have the Fragment Number subfield of the received data MPDU set to an offset"  Passive voice is considered dangerous.  It is quite reasonable to read this as "The receiving STA shall set the Fragment Number subfield of the received Data MPDU to an offset ..." Is this the intention? Seems daft to me. | | Reword to avoid passive voice. In particular consider replacing "received" by "transmitted"! | | Revised –  Proposed resolution is to remove the normative text from this NOTE (see CID 1220) and refer the commenter to the normative text in 9.22.7 which has the requested statement in active voice: “ …the S1G originator of an A-MPDU that is not a VHT Single MPDU eliciting an NDP BlockAck frame shall set the value of the Fragment Number subfield value of in the Sequence Control field of …”  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1222 | 178.53 | 9.22.7.4 | "FNis the value of the Fragment Number subfield of the received data MPDU of an AMPDU" -- surely whether it is within an A-MPDU doesn't matter to the encoding of the fragment number. | | Remove "of an A-MPDU". | | Revised –  The fact that the MPDU is within an A-MPDU is important because fragmentation is not allowed in an A-MPDU and hence the FN subfield can be used to indicate the offset. Proposed resolution further clarifies this by additionally specifying that a VHT Single MPDU is excempt from this rule as it may contain fragments i.e., becomes “of an A-MPDU that is not a VHT Single MPDU”.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1223 | 179.07 | 9.22.7.5 | " The starting sequence number stored in the Starting Sequence Control field of NDP BlockAck frames shall be set to WinStartR. The starting sequence number stored in the Starting Sequence Control field of BAT frames shall be set to WinStartR" -- passive voice considered dangerous | | Reword into the active. Who does the setting? | | Rejected –  The sentences referred by the commenter uses the same terminology as the preceding sentence which is present in baseline REVmc 2.0: “The Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield of the BlockAck frame shall be set to any value in the range from (WinEndR - 63) to WinStartR.” | |
| 1505 | 179.07 | 9.22.7.5 | The two sentences added in lines 8-10 of page 179 have the same rule for two different frames. Merge them. | | Replace the two added sentences with the following: "The Starting Sequence Number stored in the Starting Sequence Control field of NDP BlockAck frames and of the BAT frame shall be set to WinStartR." | | Revised –  Agree with the commenter. Proposed resolution accounts fo the suggested change with somoe minor rewording.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | |
| 1224 | 179.19 | 9.22.7.7 | "Insert three new paragraphs". I can count at least that high, but I can't see three. That means I don't know where the inserts go, which may affect its meaning. | | Correct editing instruction. | Revised –  Agree with the commenter. Proposed resolution corrects the instruction.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. | | |
| 1506 | 179.21 | 9.22.7.7 | Need to keep consistency with BlockAck ID setting from the originator of NDP BlockAck frames as described in 8.3.5.5. | Replace: "If the received BlockAck response is of an expected NDP BlockAck 1MHz (or 2MHz), the originator shall accept it as correctly received if the value of the BlockAck ID field equals the 2 (or 6) LSBs of the Scrambler subfield in the Service field of the immediately previously transmitted A-MPDU or BlockAckReq frame and the starting sequence number included in the Starting Sequence Control field equals WinStartO." With: "If the received BlockAck response is of an expected NDP BlockAck 1MHz (or >=2MHz), the originator shall accept it as correctly received if the value of the BlockAck ID field equals the 2 (or 6) LSBs of the Scrambler Initialization value, after scrambling, in the Service field of the immediately previously transmitted A-MPDU or BlockAckReq frame and the Starting Sequence Number included in the Starting Sequence Control field equals WinStartO." | | | | Revised –  Agree in principle with the commenter. Proposed resolution accounts for the suggested change and clarifies that the Scrambler Initialization value is obtained from the PHY-TXEND.confirm parameter SCRAMBLER\_OR\_CRC.  TGah editor to make changes shown in 14/0283r2 under the heading for CIDs from 1215 to 1506. |

**Discussion:***None.*

**Note to TGah Editor: *Instructions are updated to 802.11REVmc D2.0.***

8.6.5.3 ADDBA Response frame format

**Instructions to TGah Editor: *Change the paragraph below as follows:***

The Originator Parameter field is present only if dot11S1GOptionImplemented is true, and the Block Ack Action field is 1, and it is defined in 8.4.1.15a.

* **Block Acknowledgment (Block Ack)**
* **Introduction**

**Instructions to TGah Editor: *Change the subclause below as follows:***

***Insert the following after the third paragraph:***

An S1G non-AP STA may negotiate an asymmetric Block Ack operationwith an S1G AP as described in 9.22.2 if it has received from the S1G AP a frame containing an S1G Capabilities element with the Asymmetric Block Ack Supported set to true; otherwise it shall not negotiate an asymmetric Block Ack operation. A non-S1G STA shall not negotiate asymmetric Block Ack operation. An S1G AP with dot11AsymmetricBlockAckSupport set to false shall not support asymmetric Block Ack operation.(#814) When used, the responding S1G STA may use a lower(#915) MCS for transmitting the immediate Block Ack control response frame than is computed according to the rules of 9.7. The intended recipient STA maintains a measure of the degree of asymmetry between the AP and the STA and implicitly indicates the value to the originator AP during the Block Ack setup phase. This degree of asymmetry is represented as the difference in MCS values between AP and STA, and referred to as MCSDifference (see 9.22.2). In the Data & Block Ack phase, the originator AP uses the MCSDifference to compute the duration field for A-MPDUs of regular frames as described in Clause 8 (Frame formats) and immediate Block Ack control response frame.

**Instructions to TGah Editor: *Change the 4th paragraph as follows:***

A DMG STA shall support the HT-Immediate Block Ack extension. A DMG STA shall not use the HT-Delayed Block Ack extension. An S1G STA that sets the A-MPDU Supported field in the S1G Capabilities element to 1 shall support the HT-Immediate BlockAck extension. An S1G STA that sets the HT-Delayed Block Ack field in the S1G Capabilities element to 1 shall support the HT-Delayed BlockAck extension.

* **Setup and modification of the Block Ack parameters**

**Instructions to TGah Editor: *Insert the following as the 1st paragraph of this subclause:***

Where the generic terms ADDBA Request frame, ADDBA Response frame, and DEL BA frame are used throughout 9.22 in reference to a Block Ack agreement between S1G STAs, the appropriate variant according to this subclause (e.g., NDP ADDBA Request, BAT ADDBA Request, and ADDBA Request etc.) is referenced by the generic term.

**Instructions to TGah Editor: *Change the 1st paragraph as follows:***

An originator that intends to use the Block Ack mechanism for the transmission of QoS data frames to an intended recipient should first check whether the intended recipient STA is capable of participating in Block Ack mechanism by discovering and examining its Delayed Block Ack and Immediate Block Ack capability bits. If the intended recipient STA is capable of participating, the originator sends an ADDBA Request frame indicating the TID for which the Block Ack is being set up. For an ADDBA set up between STAs where one is a non-HT STA, the Block Ack Policy and Buffer Size fields in the ADDBA Request frame are advisory and may be changed by the recipient. The Buffer Size field in the ADDBA Request frame is advisory and may be changed by the recipient for an ADDBA set up between HT STAs and S1G STAs. The block Ack Timeout Value field in the ADDBA Request frame is advisory and may be changed by the recipient for an ADDBA set up between HT STAs and S1G STAs.

**Instructions to TGah Editor: *Insert immediately after the 1st paragraph:***

If the intended S1G recipient is capable of participating in an HT-Immediate Block Ack session, the S1G originator shall send an NDP ADDBA Request to indicate that it expects only NDP BlockAck frames during the BlockAck session with the following exceptions:

1) If the S1G originator has the dot11BATImplemented equal to true and the BAT Support subfield in the most recently received S1G Capabilities element from the S1G recipient is 1 and a TWT has been setup with the S1G recipient as described in 9.41 (Target Wake Time), then the S1G originator shall send a BAT ADDBA Request to indicate that it expects only BAT frames during the Block Ack session.

2) When any of the conditions below is satisfied then the S1G originator may send an ADDBA Request to indicate that it expects only BlockAck frames during the BlockAck session:

* 1. The value of the Buffer Size field in the ADDBA Request, carried in a S1G\_LONG or S1G\_SHORT PPDU, is greater than 16
  2. The value of the Buffer Size field of the ADDBA Request, carried in a S1G\_1M PPDU, is greater than 8
  3. The dot11AsymmetricBlockAckSupport is true and Asymmetric BA Support field in the most recently received S1G Capabilities element from the S1G recipient is 1.

**Instructions to TGah Editor: *Insert this paragraph after the 2nd paragraph:***

When the S1G recipient STA rejects the request it may indicate a status code of 106 (“REJECTED\_NDP\_BLOCK\_ACK\_SUGGESTED”) to indicate to the S1G originator that it prefers to generate only NDP BlockAck frames.

**Instructions to TGah Editor: *Change the 3rd paragraph as follows:***

When the recipient STA accepts, it indicates the type of Block Ack agreement, the type of BlockAck frames and the number of buffers that it shall allocate for the support of this Block Ack agreement within the ADDBA Response frame. Each Block Ack agreement that is established by a STA may have a different buffer allocation. If the intended recipient STA rejects the request, then the originator shall not use the Block Ack mechanism.

**Instructions to TGah Editor: *Insert immediately after the 3rd paragraph:***

An S1G recipient STA that accepts an HT-Immediate Block Ack session shall respond with:

1. An NDP ADDBA Response if the value of the Buffer Size field of the NDP ADDBA Response is not greater than the value of the maximum number of MSDUs and A-MSDUs that can be acknowledged with the selected NDP BlockAck frame and no TWT has already been setup with the S1G originator as described in 9.41 (Target Wake Time).
   * This value is 8 for NDP\_1M BlockAck frames and 16 for NDP\_2M BlockAck frames as described in 8.3.5.1.5 (NDP BlockAck). The NDP ADDBA Response frame shall be carried in a S1G\_1M PPDU to indicate use of NDP\_1M BlockAck frames and shall be carried in a S1G\_SHORT or S1G\_LONG PPDU to indicate use of NDP\_2M BlockAck frames.
2. Otherwise, a BAT ADDBA Response as a response to a BAT ADDBA Request if a TWT has already been setup with the S1G originator as described in 9.41 (Target Wake Time).
   * The value of the Buffer Size field in the BAT ADDBA Response shall not be greater than 32.
3. Otherwise, a ADDBA Response to indicate use of BlockAck frames.
   * The MCS subfield in the Originator Parameter field shall be set to 15 unless the dot11AsymmetricBlockAckSupport is true and the Assymetric BA Support field in the most recently received S1G Capabilities from the S1G originator is 1 in which case the MCS subfield may indicate the value of the preferred MCS if asymmetric BlockAck operation is used. The preferred MCS implicitly indicates the MCSDifference value, which is the difference between the preferred MCS and the MCS at which the ADDBA Response is sent.

**Instructions to TGah Editor: *Change the 4th paragraph as follows:***

When the Block Ack Policy subfield value is set to 1 by the originator of an ADDBA Request frame between HT STAs, then the ADDBA Response frame accepting the ADDBA Request frame shall contain 1 in the Block Ack Policy subfield.

**Instructions to TGah Editor: *Change the 6th paragraph as follows:***

When a Block Ack agreement is established between two HT STAs, two DMG STAs or two S1G STAs, the originator may change the size of its transmission window if the value in the Buffer Size field of the ADDBA Response frame is larger than the value in the ADDBA Request frame. If the value in the Buffer Size field of the ADDBA Response frame is smaller than the value in the ADDBA Request frame, the originator shall change the size of its transmission window (WinSizeO) so that it is not greater than the value in the Buffer Size field of the ADDBA Response frame and is not greater than the value 64.

**9.22.5 Teardown of the Block Ack mechanism**

**Instructions to TGah Editor: *Change the 1st paragraph as follows:***

When the originator has no data to send and the final Block Ack exchange has completed, it shall signal the end of its use of the Block Ack mechanism by sending the DELBA frame to its recipient. The DELBA frame sent by the S1G originator shall be a BAT DELBA if a BAT ADDBA Request was sent during Block Ack setup or NDP DELBA if a NDP ADDBA Request was sent during Block Ack setup or DELBA if ADDBA Request was sent during Block Ack setup.The recipient does not generate a Management frame in response to the DELBA frame. The recipient of the DELBA frame shall release all resources allocated for the Block Ack transfer.

The Block Ack agreement may be torn down if there are no BlockAck, BlockAckReq, or QoS Data frames (sent under Block Ack policy) for the Block Ack’s TID received from the peer within a duration of Block Ack timeout value (see 10.5.4 (Error recovery upon a peer failure)).

* The DELBA Frame transmitted to release the Block Ack setup of a GCR service shall include the GCR Group Address element to indicate the group address of the GCR service.**Selection of BlockAck and BlockAckReq variants**

**Instructions to TGah Editor: *Change the 1st paragraph as follows:***

The Compressed Bitmap subfield of the BA Control field or BAR Control field shall be set to 1 in all BlockAck and BlockAckReq frames sent from one HT STA to another HT STA and from one S1G STA to another S1G STA, and shall be set to 0 otherwise.

**Instructions to TGah Editor: *Change the instructions and the paragraphs below as follows:***

***Change the 5th paragraph as shown below:***

Where the terms BlockAck and BlockAckReq are used within 9.22.7 (HT-immediate Block Ack extensions) and 9.22.8 (HT-delayed Block Ack extensions), the appropriate variant according to this subclause (e.g., Compressed, Multi-TID) is referenced by the generic term. The term BlockAck as used within 9.22.7 (HT-immediate Block Ack extensions) includes the additional NDP\_1M BlockAck , NDP\_2M BlockAck, BAT and BlockAck frame variants.

***Insert the following paragraphs after the 6th paragraph as shown below:***

The S1G recipient of an accepted Block Ack agreement that was negotiated with NDP ADDBA shall use NDP BlockAck frames instead of BlockAck frames to acknowledge MPDUs within A-MPDUs during an HT-immediate Block Ack session.

The S1G recipient of an accepted Block Ack agreement that was negotiated with BAT ADDBA shall use BAT frames instead of BlockAck frames to acknowledge MPDUs within A-MPDUs during an HT-immediate Block Ack session. Otherwise, the S1G recipient of an accepted BlockAck agreement shall not use BAT frames.

The S1G recipient of an accepted Block Ack agreement that was negotiated with ADDBA shall use BlockAck frames to acknowledge MPDUs within A-MPDUs during an HT-immediate Block Ack session.

The S1G recipient of an accepted Block Ack agreement that was negotiated with either ADDBA Request/NDP ADDBA Response or NDP ADDBA Request/ADDBA Response shall use either NDP BlockAck or BlockAck frames depending on the type of response frame elicited by the S1G originator. The type of response shall be:

* An NDP BlockAck frame if the RXVECTOR parameter RESPONSE\_INDICATION of the eliciting PPDU that contains a BlockAckReq or an A-MPDU is equal to NDP Response
* A BlockAck frame if the RXVECTOR parameter RESPONSE\_INDICATION of the eliciting PPDU that contains a BlockAckReq or an A-MPDU is equal to Normal Response
* A PPDU that contains a BlockAck frame if the RXVECTOR parameter RESPONSE\_INDICATION of the eliciting PPDU is equal to Long Response
* **Scoreboard context control during full-state operation**

**Instructions to TGah Editor: *Change this subclause as follows:***

***Change bullet b) of sub-clause 9.22.7.3:***

* For each received data MPDU that is related with a specific full-state operation HT-immediate Block Ack agreement, the block acknowledgment record for that agreement is modified as follows, where *SN* is the value of the Sequence Number subfield of the received data MPDU, and *FN* is equal to 0 except when the received data MPDU is part of an A-MPDU that is not a VHT Single MPDU carried in an S1G PPDU with RXVECTOR parameter RESPONSE\_INDICATION equal to NDP Response in which case *FN* is equal to the value of the Fragment Number subfield of the received data MPDU:
* If , set to 1 the bit in position *SN* within the bitmap.
* If , set *WinEndR* = *SN* + *FN* and *WinStartR* = *SN + FN* – *WinSizeR* + 1.
* If ,
* Set to 0 the bits corresponding to MPDUs with Sequence Number subfield values from *WinEndR*+1 to *SN+FN* – 1.
* Set *WinStartR* = *SN* + *FN* – *WinSizeR* + 1.
* Set *WinEndR* = *SN* + *FN*.
* Set to 1 the bit at position *SN* in the bitmap.

***Insert a second note after the first note in sub-clause 9.21.7.3 as below:***

NOTE2- Fragmentation is not allowed during an HT-immediate Block Ack agreement as described in 9.2.7.. All data MPDUs included in an A-MPDU that is not a VHT Single MPDU generated during HT-immediate Block Ack with NDP BlockAck have the Fragment Number subfield set to an offset to *WinEndO* as described in Clause 9.22.7.7 (Originator’s behavior).

* **Scoreboard context control during partial-state operation**

**Instructions to TGah Editor: *Change this subclause as follows:***

***Change bullet b) of sub-clause 9.22.7.4:***

* For each received data MPDU that is related with a specific partial-state operation HT-immediate Block Ack agreement, when no temporary record for the agreement related with the received data MPDU exists at the time of receipt of the data MPDU, a temporary block acknowledgment record is created as follows, where *SN* is the value of the Sequence Number subfield of the received data MPDU and *FN* is equal to 0 except when the received data MPDU is part of an A-MPDU that is not a VHT Single MPDU carried in an S1G PPDU with RXVECTOR parameter RESPONSE\_INDICATION is equal to NDP Response in which case FN is equal to the value of the Fragment Number subfield of the received data MPDU :
* *WinEndR* = *SN+FN.*

* **Generation and transmission of BlockAck by an HT STA or S1G STA**

**Instructions to TGah Editor: *Change this subclause as follows:***

***Change the 2nd paragraph as shown below:***

When responding with a BlockAck frame to either a received BlockAckReq frame or a received A-MPDU with ACK Policy equal to Normal Ack (i.e., implicit Block Ack request) during either full-state operation or partial-state operation, any adjustment to the value of *WinStartR* according to the procedures defined within 9.22.7.3 (Scoreboard context control during full-state operation) and 9.22.7.4 (Scoreboard context control during partial-state operation) shall be performed before the generation and transmission of the response BlockAck frame. The Starting Sequence Number subfield of the Block Ack Starting Sequence Control subfield of the BlockAck frame shall be set to any value in the range from (*WinEndR* - 63) to *WinStartR*. The Starting Sequence Number stored in the Starting Sequence Control field of NDP BlockAck and BAT frames shall be set to *WinStartR*. The values in the recipient's record of status of MPDUs beginning with the MPDU for which the Sequence Number subfield value is equal to *WinStartR* and ending with the MPDU for which the Sequence Number subfield value is equal to *WinEndR* shall be included in the bitmap of the BlockAck frame. The bitmap of the NDP BlockAck frame is protected using the encoding procedure described in 9.54 (Bitmap Protection for NDP BlockAck frames).

* **Originator’s behavior**

**Instructions to TGah Editor: *Change the instructions and the paragraphs below as follows:***

***Insert a new paragraph after the 1st, paragraph of sub-clause 9.22.7.7:***

If the received BlockAck response is of an expected NDP\_1M BlockAck frame (or an NDP\_2M BlockAck frame), the S1G originator shall accept it as correctly received if the value obtained from the BlockAck ID field equals the 2 LSBs (or the 6 LSBs) of the Scrambler Initialization value of the immediately previously transmitted A-MPDU that is not a VHT Single MPDU or BlockAckReq frame and the Starting Sequence Number obtained from the Starting Sequence Control field equals *WinStartO*. The Scrambler Initialization value is obtained from the PHY-TXEND.confirm parameter SCRAMBLER\_OR\_CRC. The values of the BlockAck ID and Starting Sequence Number are obtained after decoding the NDP BlockAck frame as described in 9.54 (Bitmap Protection for NDP BlockAck frames),The S1G originator shall otherwise consider the NDP BlockAck frame to be lost.

**Instructions to TGah Editor: *Insert the following paragraphs after the 4th paragraph as follows:***

During an accepted HT-Immediate BlockAck session, the S1G originator shall set the TXVECTOR parameter RESPONSE\_INDICATION of a PPDU transmitted to the S1G recipient that elicits a block acknowledgment frame to:

* NDP Response if the BlockAck session was negotiated with NDP ADDBA Request/NDP ADDBA Response exchange
* Normal Response if the BlockAck session was negotiated with either BAT ADDBA Request/BAT ADDBA Response or ADDBA Request/ADDBA Response exchange

During an accepted HT-Immediate BlockAck session, the S1G originator is allowed to elicit an NDP BlockAck or a BlockAck frame on a per-PPDU basis only if the BlockAck session was negotiated with either ADDBA Request/NDP ADDBA Response or NDP ADDBA Request/ADDBA Response exchanges. In this case the S1G originator may set the TXVECTOR parameter RESPONSE\_INDICATION of a PPDU transmitted to the S1G recipient that elicits a block acknowledgment frame to either NDP Response or Normal Response.

The S1G originator shall not set the TXVECTOR parameter RESPONSE\_INDICATION to LONG RESPONSE for a PPDU transmitted to the S1G recipient that elicits a block acknowledgement frame, if neither BlockAck nor BAT frames have been negotiated with the S1G recipient. The S1G originator may set the TXVECTOR parameter RESPONSE\_INDICATION to Long Response if either BlockAck ro BAT frames have been negotiated with the S1G recipient.

**Instructions to TGah Editor: *Insert the following paragraphs after the 5th paragraph as follows:***

During an accepted HT-Immediate BlockAck session, the S1G originator of an A-MPDU that is not a VHT Single MPDU eliciting an NDP BlockAck frame shall set the value of the Fragment Number subfield in the Sequence Control field of each MPDU in the A-MPDU to *WinStartO*+ *WinSizeO* – 1 – *SN*, where SN is the value of the Sequence Number subfield in the corresponding MPDU within the A-MPDU.

**Instructions to TGah Editor*: Add the following row in Table 8-42 Status codes:***

|  |  |  |
| --- | --- | --- |
| * **Status codes** | | |
| **Status code** | **Name** | **Meaning** |
| 106 | REJECTED\_NDP\_BLOCK\_ACK\_SUGGESTED | BlockAck negotiation refused because, due to buffer constraints and other unspecified reasons, the recipient prefers to generate only NDP BlockAck frames. |
| 107–65 535 |  | Reserved |