IEEE P802.11
Wireless LANs

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| LB 200 Comment Resolution for Clause 9.3.2.9a |
| Date: 2014-01-01 |
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Abstract

This submission proposes resolutions for comments in clause 9.3.2.9a of TGah Draft 1.0 with the following CIDs:

1188, 1189, 1190, 1191, 1192, 1193, 1716, 1717, 2311, 2312, 2488, 2489, 2508, 2509

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** |
| 1188 | 158.22 | 9.3.2.9a | "An S1G STA may partition an MSDU or an MMPDU into multiple fragments as described in 9.5(Fragmentation) and send the MPDUs resulting from the fragmentation of the MSDU or MMPDU asindependent transmissions."This is already permitted. No additional normative statement is require. | Replace "may" with "can". | Agree with the commenter.Resolution accounts for the change.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 1189 | 158.35 | 9.3.2.9a | "STAs shall not"Normative requirements can only specify the behaviour of an individual STA, not all STAs. To test the latter would merely requiring waiting to the end of the Universe, then collecting all STAs ever made and applying the test. Any individual STA failing the test causes them all to fail. | Review the draft and rewrite all normative statements involving multiple STAs or APs into the singular form. Search, e.g., for "(STAs|APs) (shall|may|should)". | Accepted – TGah editor to make the changes proposed by the commenter. |
| 1190 | 158.36 | 9.3.2.9a | "in this section"Please read the IEEE-SA style guide. We have clauses and subclauses in IEEE-SA standards. | "in this subclause".Review the 12 instances of "this section" and replace as above if referring to the enclosing subclause. | Accepted – TGah editor to make the changes proposed by the commenter. |
| 1191 | 158.58 | 9.3.2.9a | " NDP BlockAck 1MHz" -- OK, this is only a note, but please use defined terms rather than jumbling them together. | "A 1 MHz NDP BlockAck frame"Ditto at line 59. | Agree with the commenter.Resolution is to use defined frame types as specified in 8.3.5.1.5.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 1192 | 158.64 | 9.3.2.9a | "BlockAck ID field value equals the 2 (or 6) LSBs of the Scrambler Initialization value in the Service field"The MAC doesn't see the contents of PHY header fields | Relate to \*VECTOR parameters. | Agree in principle with the commenter. This issue needs to be solved not only for NDP BlockAck frames but for all frames that use the Scrambler value or the CRC value that are generated by the PHY. Hence, proposed resolution is to provide the necessary MAC-PHY-MAC signalling of the Scrambler Initialization value and the CRC value (for NDP PS-Polls) by adding the SCRAMBLER\_OR\_CRC parameter in RXVECTOR and in PHY-TXEND.confirm. Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 1193 | 159.06 | 9.3.2.9a | " it may retransmit the last fragment MPDU" -- last what? Last transmitted, or last in the MSDU? | Replace with: " it may retransmit the last transmitted MPDU containing a fragment" | Agree in principle with the commenter. Resolution clarifies this aspect.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 1716 | 158.58 | 9.3.2.9a | There is no such term as "Note:" in IEEE standards. | Replace "Note: " with "NOTE--" throughout this draft. | Accepted – TGah editor to make the changes proposed by the commenter. |
| 1717 | 158.58 | 9.3.2.9a | "NDP BlockAck 1MHz" is not a defined object in this draft. | Either define this object or delete this note. | Agree in principle with the commenter. Proposed resolution is to use the same notation of NDP BlockAck frames as in 8.3.5.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 2311 | 158.38 | 9.3.2.9a | Change to "An originator STA may send MPDUs containing an MSDU fragment or MMPDU fragment and set the Ack policy ofthe MPDU to Block Ack." | As proposed. | Agree in principle with the commenter. Proposed resolution is inline with the change.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 2312 | 158.55 | 9.3.2.9a | "MSDU with Fragment Number from 8 to 15"MSPU is from up layer which is not fragmented. | Change the text to fix this. | Agree in principle with the commenter. Proposed resolution defines an F-MPDU to avoid any ambiguity.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 2488 | 158.19 | 9.3.2.9a | The Fragment BA procedure violates the existing rule that MSDUs transmitted under a BA agreement shall not be fragmented | Find the places in the baseline which specify this and soften them | Rejected **–**The Fragment BA does not follow the BlockAck agreement rules and hence does not violate any rules it should follow. For clarification a Note can be found in 9.2.7: “NOTE -A fragmented MSDU or MMPDU transmitted by an S1G STA to another S1G STA can be acknowledged either using immediate acknowledgment (i.e., transmission of an (NDP) ACK frame after a SIFS) or using the Fragment BA procedure described in (9.3.2.9a Fragment BA procedure).” |
| 2489 | 158.21 | 9.3.2.9a | This paragraph doesn't appear to say anything new -- non-S1G STAs can also partition MSDUs/MMPDUs into multiple fragments | Delete this para | Proposed resolution replaces “may” with “can” as suggested by commenter of CID 1188.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 2508 | 158.38 | 9.3.2.9a | Not the best way to describe a fragment and missing a normative verb. Also at L43 - how is implicit BA signaled? | Change "An originator STA may send MPDUs containing an MSDU or MMPDU fragment and set the Ack policy of the MPDU to Block Ack" to "An originator STA may send MPDUs containing a non-zero value for the Frag subfield and may set the Ack policy of the MPDU to Block Ack" - next sentence should include an "if" or a "when" somewhere in it. The wording of this paragraph needs to be fixed to describe how to signal implicit BA. | Agree in principle with the commenter. Proposed resolution is to define an MPDU carrying a fragment as a Fragment MPDU (F-MPDU) and further clarify the required signalling.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |
| 2509 | 158.50 | 9.3.2.9a | There needs to be some limitation on the orginator behavior - if the originator has no restrictions, then it could send frags 5-10 - and what does the responder do if, for example, it misses 5,6,7? Or for that matter, what does the responder do if it receives 5-10? What does the first bit of the bitmap represent? 1 MHz vs 2 MHz? So many questions! | Place limits on the originator behavior, so that within a single PPDU, it can only transmit frags in a range of 0-7 or 8-15. Also require that if the responder receives any frag in the range 0-7, it shall always respond wth a map that begins with 0 and if it receives any frag in the range 8-15, it responds with a map that begins with 8. But aren't these restrictions conditional on the response width being 1 MHz? (i.e. if the response width is 2 MHz, then the bitmap always begins with frag=0) And does the originator have any control over the response width? | Agree in principle with the commenter. See discussion.Revised – TGah editor to make changes shown in 14/0074r0 under the heading for CIDs from 1188 to 2509. |

**Discussion:***CID 2509- Added restriction to the originator by specifying that it shall not transmit F-MPDUs with FN > 7 if it has not received acknowledgement that F-MPDUs with FN form 0 to 7 were successfully delivered. The first bit of the bitmap represents F-MPDU with FN 0 or 8 for NDP BlockAck (1 MHz) or with FN equal to 0 for NDP BlockAck (>=2 MHz) and is already defined in 8.3.5.1.5 (NDP BlockAck). Regarding the 1MHz vs 2MHz clarified that only one type of frame can be sent by the receiving STA and it depends on the format of the eliciting MPDU with the exception of a 1MHz control response frame as defined in 9.7.6.6.*

* **Fragment BA procedure**

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

An S1G STA can partition an MSDU or an MMPDU into multiple fragments as described in 9.5 (Fragmentation) and send the MPDUs containing the fragments of the MSDU or of the MMPDU as independent transmissions. In this subclause a Fragment MPDU (F-MPDU) is an MPDU that contains a fragment of an MSDU or of an MMPDU.An S1G STA indicates support of Fragment BA using the Fragment BA Support subfield of the S1G Capabilities Info field in the S1G Capabilities element. An S1G STA shall set the Fragment BA Support subfield to 1 in S1G Capabilities element if the dot11FragmentBAOptionImplemented is true. Otherwise, the S1G STA shall set the Fragment BA Support subfield to 0. An S1G STA (known as the originator STA) with dot11FragmentBAOptionImplemented set to true sending frames to another S1G STA may use the Fragment BA procedure described in this section if it has received from the STA (known as the recipient STA) a frame that included an S1G Capabilities element with the Fragment BA Support subfield set to 1. Otherwise an S1G STA shall not use the Fragment BA procedure described in this section. Non-S1G STAs shall not use the Fragment BA procedure described in this section.

An originator STA may send F-MPDUs and set the Ack Policy of the F-MPDU to Block Ack. A recipient STA shall not send any frame as an immediate response to an F-MPDU that has the Ack Policy equal to Block Ack. An originator STA may solicit an immediate response following an F-MPDU by setting the Ack Policy of the eliciting F-MPDU to Implicit Block Ack Request.

The receiving STA that is the intended receiver of an F-MPDUwith the Ack Policy equal to Implicit Block Ack Request shall send an NDP BlockAck frame after a SIFS time, without regard of the idle/busy state of the medium, that is:

1. an NDP BlockAck (1 MHz) frame if the eliciting F-MPDU is either carried in a 1 MHz format PPDU or the receiving STA has indicated use of 1MHz control response frames as described in 9.7.6.6 (Channel Width selection for control frames).
2. NDP BlockAck (≥2 MHz) frame if the eliciting F-MPDU is carried in a ≥ 2 MHz short/long format PPDU and the receiving STA has not indicated use of 1MHz control response frames as described in 9.7.6.6 (Channel Width selection for control frames).

The receiving STA shall generate the BlockAck ID and the Starting Sequence Control field of the NDP BlockAck as described in 8.3.1.5 (NDP BlockAck).

The receiving STA shall include the receipt status of a set of the F-MPDUs in the BlockAck Bitmap field of the NDP BlockAck frame as follows:

1. If the originator STA elicits an NDP BlockAck (1MHz) frame as a response, the BlockAck Bitmap field of the NDP BlockAck frame indicates the receipt status of a set of F-MPDUs which depends on the value of the Fragment Number (FN) subfield in the Sequence Control field of the F-MPDU that elicited the response:
	1. If the value of the FN is not greater than 7 then the BlockAck Bitmap field shall indicate the receipt status of F-MPDUs with FNs from 0 to 7 (all inclusive).
	2. If the value of the FN is greater than 7 then the BlockAck Bitmap field shall indicate the receipt status of F-MPDUs with FNs from 8 to 15 (all inclusive).
2. If the originator STA elicits an NDP BlockAck (≥2 MHz) frame as a response, the BlockAck Bitmap field of the NDP BlockAck frame shall indicate the receipt status of the F-MPDUs with FNs from 0 to 15 (all inclusive).

Note: An NDP BlockAck (1MHz) frame can acknowledge only a limited number of consecutive fragments because its BlockAck Bitmap field size is 8. Instead, an NDP BlockAck (≥ 2MHz) frame can acknowledge up to the maximum number of fragments because its BlockAck Bitmap field size is 16.

An originator STA that elicits an NDP BlockAck (1 MHz) frame as a response shall not transmit an F-MPDU that has a FN greater than 7 if it has not previously received an NDP BlockAck (1MHz) frame that indicates successful reception of all F-MPDUs with FNs from 0 to 7.

The originator STA shall consider an NDP BlockAck (1 MHz) frame (or an NDP BlockAck (≥2 MHz) frame) as successfully received if the BlockAck ID field value equals the 2 LSBs (or 6 LSBs) of the Scrambler Initialization value in the Service field and the Starting Sequence Control field value equals the Sequence Number of the fF-MPDU that elicited the response. The Scrambler Initialization value shall be obtained from the PHY-TXEND.confirm parameter SCRAMBLER\_OR\_CRC.

If the originator STA does not receive an NDP BlockAck frame as an immediate response, it may retransmit the last transmitted F-MPDU to re-solicit an immediate NDP BlockAck response.

**Instructions to TGah Editor*: Add the following sentence at the end of the paragraph in the Description column of the ACK ID row in Tables 8-46, and 8-47, and of the BlockAck ID row in Tables 8-50, and 8-51, and as the last sentence of the 4th paragraph in subclause 8.7.4.1:***

The Scrambler Initialization value is obtained from the RXVECTOR parameter SCRAMBLER\_OR\_CRC.

**Instructions to TGah Editor*: Add the following sentence at the end of the paragraph in the Description column of the ACK ID row in Tables 8-48, and 8-49:***

The CRC value is obtained from the RXVECTOR parameter SCRAMBLER\_OR\_CRC.

* **Semantics of the service primitive**

**Instructions to TGah Editor*: Change this subclause as follows (@REVmc D2.0):***

The semantics of the primitive are as follows:

PHY-TXEND.confirm

This primitive provides the following parameter:

PHY-TXEND.confirm(

SCRAMBLER\_OR\_CRC

)

The SCRAMBLER\_OR\_CRC is present if dot11S1GOptionImplemented is true. The SCRAMBLER\_OR\_CRC parameter value depends on the type of the transmitted frame:

* For a non-NDP frame the value of the SCRAMBLER\_OR\_CRC parameter is the Scrambler Initialization value in the Service field after scrambling (i.e., [B0:B6] of the Service field]) (as defined in 24.3.9.2 (SERVICE field)) of the frame.
* For an NDP MAC frame the value of the SCRAMBLER\_OR\_CRC parameter is the calculated CRC value in the SIG/SIGA field (as defined in (24.3.8.2.1.5 CRC calculation for S1G SIGA fields)). For a 1MHz NDP MAC frame this value is equal to [B26:B29] of the SIG field and for a >=2MHz NDP MAC frame this value is equal to [B38:B41] of the >=2 MHz SIGA field.**TXVECTOR and RXVECTOR parameters**

**Instructions to TGah Editor*: Insert new rows to Table 24-1 as shown below:***

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| * **TXVECTOR and RXVECTOR parameters (continued)**
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| **Parameter** | **Condition** | **Value** | **TXVECTOR** | **RXVECTOR** |
| … | … |  |  |  |
|  |  |  |  |
| SCRAMBLER\_OR\_CRC | FORMAT is S1G and NDP\_FRAME is 0 | Indicates the Scrambler Initialization value in the Service field (as defined in 24.3.9.2 (SERVICE field)) prior to descrambling.Bit sequence of 7 bits in length: [B0:B6] of the SERVICE field value prior to descrambling. | N | Y |
| FORMAT is S1G\_DUP\_2M and NDP\_FRAME is 0 | Indicates the Scrambler Initialization value in the Service field (as defined in 24.3.9.2 (SERVICE field)) prior to descrambling.Bit sequence of 7 bits in length: [B0:B6] of the SERVICE field value prior to descrambling. | N | Y |
| FORMAT is S1G\_DUP\_1M and NDP\_FRAME is 0 | Indicates the Scrambler Initialization value in the Service field (as defined in 24.3.9.2 (SERVICE field)) prior to descrambling.Bit sequence of 7 bits in length: [B0: B6] of the SERVICE field value prior to descrambling. | N | Y |
| FORMAT is S1G and NDP\_FRAME is 1 | Indicates the value of the calculated CRC in the SIG/SIGA field.Bit sequence of 4 bits in length: Either [B26:B29] of the 1MHz SIG field or [B38:B41] of the >=2 MHz SIGA field. | N | Y |
| FORMAT is S1G\_DUP\_2M and NDP\_FRAME is 1 | Indicates the value of the calculated CRC in the SIG/SIGA field.Bit sequence of 4 bits in length: Either [B26:B29] of the 1MHz SIG field or [B38:B41] of the >=2 MHz SIGA field. | N | Y |
| FORMAT is S1G\_DUP\_1M and NDP\_FRAME is 1 | Indicates the value of the calculated CRC in the SIG/SIGA field.Bit sequence of 4 bits in length: Either [B26:B29] of the 1MHz SIG field or [B38:B41] of the >=2 MHz SIGA field. | N | Y |
| Otherwise | Not present | N | Y |
| NOTE 1—In the “TXVECTOR” and “RXVECTOR” columns, the following apply:Y = Present;N = Not present;O = Optional;MU indicates that the parameter is present once for an S1G SU PPDU and present per user for an S1G MU PPDU. Parameters specified to be present per user are conceptually supplied as an array of values indexed by *u*, where *u* takes values 0 to NUM\_USERS-1. |