IEEE P802.11
Wireless LANs

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| LB 200 Comment Resolution for Clause 9.3.2.8 |
| Date: 2014-01-31 |
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Abstract

This submission proposes resolutions for comments in clause 9.3.2.8 of TGah Draft 1.0 with the following CIDs:

1179, 1180, 1181, 1182, 1183, 1184, 1186, 1187, 1469, 1470, 2126, 2310, 2829, 2856, 2901

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** |
| 1179 | 156.58 | 9.3.2.8 | "NDP (Modified) ACK frame" - no such frame exists. | Replace with "NDP Ack frame" | Revised –Agree in principle with the commenter. Proposed resolution is to replace with NDP ACK or NDP Modified ACK frame to avoid confusion. Note that both frames are defined as NDP ACK frames. TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1180 | 156.61 | 9.3.2.8 | "If the eliciting frame that requires acknowledgement is" - tautology | replace with "If the frame that requires acknowledgement is" | Revised –Agree with the commenter. Proposed resolution is to remove that paragraph and account for the suggestion in the normative text provided in this document.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1181 | 157.06 | 9.3.2.8 | This para is now too long | Find a way to split it or use list style. | Revised –Agree in principle with the commenter. Proposed resolution is to move the added normative text for S1G STAs in a separate paragraph.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1182 | 157.19 | 9.3.2.8 | "shall consider a received NDP ACK 1 (2) MHz frame as a successful response"What is an "ACK 1 (2) MHz" frame? | Define this terminology, or replace with something that has been defined, perhaps something like: ".. a 1 or 2 MHz NDP ACK frame.."Ditto at line 23. | Revised –Agree in principle with the commenter. In the newly added paragraph we specify clearly the two cases: NDP ACK (1 MHz) and NDP ACK (>=2MHz) as defined in 8.3.5. Same for NDP Modified ACK.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1183 | 157.33 | 9.3.2.8 | "Other exceptions exist for S1G STAs as described in the following two paragraphs:"you need also to find a way to call out the exception in the paragraph that these excepctions conflict with. | Add "except as defined below" in all locations that this new material conflicts with. | Revised –Agree with the commenter. Accounted for the suggestion.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1184 | 157.56 | 9.3.2.8 | "transmission of ACK frame is required" -- missing article | ".. of an ACK frame .."Ditto at lines 58 and 61. | Revised –Agree with the commenter. Accounted for the suggestion.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
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| 1186 | 158.06 | 9.3.2.8 | "generate a (NDP) ACK fame" – grammar | "generate an (NDP) ACK fame" | Revised –Agree with the commenter. Accounted for the suggestion.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1187 | 158.10 | 9.3.2.8 | "In S1G BSS," – grammar | "In a S1G BSS," | Revised –Agree with the commenter. Accounted for the suggestion.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1469 | 157.19 | 9.3.2.8 | The details on how to generate the bit sequence of the ACK ID for NDP ACK and NDP Modified ACK have been described in their corresponding subclauses (8.3.4a.1.3 and 4). Hence, simplify the sentences keeping the ACK ID generation referring to the corresponding subclauses. Also NDP ACK 1 (2) MHz should be NDP ACK 1 (>=2) MHz. Also when does the AP send a NDP modified ACK with an extended ID? | Add ">=" inside the parenthesis anticipating the number 2 i.e., "(>= 2)" in line 19 and line 23 of page 157. Also replace in line 20 "generated from the Scrambler subfield and the FCS field of" with "obtained from". Similarly, replace in line 24 replace "generated from the RA, TA, and CRC fields of" with "obtained from". clarify when the AP modified ACK with extended ID sent | Revised –Agree in principle with the commenter. The proposed resolution accounts for the suggestions.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 1470 | 158.01 | 9.3.2.8 | Some minor typos and inconsistencies in the first paragraph of this page. Also instead of when dot11S1GOptionImplemented, simply add S1G in front of STA. | Replace the first paragraph in page 158 with the following paragraph: " Upon successful reception of a Short frame that requires acknowledgment and has the From DS field set to true, an S1G STA shall generate a (NDP) ACK frame inresponse if the AID subfield of the A1 field is equal to the AID of the S1G STA and the A2 field is equal to its associated S1G AP's MAC address. Upon successful reception of a Short frame that requires acknowledgement and has the From DS field set to false, a S1G STA shall generate a (NDP) ACK frame in response if the A1 field is equal to the MAC address of the S1G STA." | Revised –Agree in principle with the commenter. Accounted for the suggestion.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
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| 2126 | 156.59 | 9.3.2.8 | The spec states that an S1G STA shall transmit NDP (Modified) ACK frames instead of an ACK frame except an ACK frame is needed for link adaption. While there is no need for an S1G STA to indicate the use of NDP ACK at all. | Change the statement to "An SIG STA shall transmit a NDP (Modified) ACK frame instead of an ACK frame in the cases identified above with the exception that an ACK frame is required for link adaptation procedure". | Revised –Agree in principle with the commenter. The proposed resolution is to remove this paragraph and there is already a paragraph with normative text inline with the commenters suggestion: “An S1G STA shall transmit NDP ACK frames for acknowledgement with the following exceptions: — transmission of an ACK frame is required if link adaptation procedure is negotiated as described in 9.29 (Link adaptation) …”TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 2310 | 158.01 | 9.3.2.8 | What is the ACK rule to acknowledge a non-short frame? | Add text to clarify it. | Revised –The text requested by the commenter is already present in this subclause. Proposed resolution is to make appropriate changes to clearly differentiate between the multiple rules we have for 11ah. TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 2829 | 157.47 | 9.3.2.8 | In the Speed Frame Exchange Operation, the mechanism to determine whether a frame previously transmitted has been received successfully or not should be more robust. Since STA has to receive a long and high modulated response (data) frame successfully in order to determine a successful acknowledgement, FA(False Alarm) would be increased. Compared to receiving a short and low modulated ACK frame as usual, receiving a data frame is more likly to be failed to decode.This will make Speed Frame Exchange operation unstable and inefficent.Like as the case of TXOP sharing relay operation, receiving PLCP header and decoding PARTIAL\_AID or a special bit in the PLCP header successfully would be enough for the robust acknowledge indication. | Change the sentence of "the successful reception of the response frame shall..." into "the successful reception of the PARTIAL\_AID in the PLCP header of the response frame shall...". | Rejected –Implicit acknowledgement, due to its false alarm issues is currently optional, while the requested change makes it mandatory which excacerbates the impact of these issues at the receiver. In addition these issues may generate pathological cases with SF exchange operation because the signalling is based in fields present in the MAC header of the frame: e.g., Ack Policy, More data, etc). Hence not being able to decode the PSDU would create problems to the correct operation with SF exchange. |
| 2856 | 157.58 | 9.3.2.8 | In 9.42.4 (Active polling procedure for non-TIM STAs), an AP can send a TACK frame in response to the received polling message sent by an active polling STA. | Add the exception condition for an active polling STA. | Revised –Agree in principle with the commenter. Proposed change is to add the exception being in line with the comment resolution document 14/0054r1 that merges 9.42.3 and 9.42.4.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |
| 2901 | 156.58 | 9.3.2.8 | This paragraph is redundant considering those sentences 54 through 61 in page 157. | Remove the sentences "An S1G STA that has indicated the use of NDP ACK shall transmit a NDP (Modified) ACK frame instead of an ACK frame in the cases identified above. The ACK ID field of the NDP ACK shall be generated as described in 8.3.5.1.3 (NDP ACK)." | Revised –Agree with the commenter. Removed paragraph as suggested.TGah editor to make changes shown in 14/0212r0 under the heading for CIDs from 1179 to 2901. |

**Discussion:** *Note that this proposed resolution includes normative text that is partly related to the comment identified by CID 1474 which is addressed in 14/0139: “The indication in the S1G Capabiltiy element for a STA do indicate that it uses 1MHz control response frames is missing”.*

**Instruction to Editor: *Please make the following changes to this subclause:***

* **ACK procedure**

(#663,664,665)

***Change the last paragraph of sub-clause 9.3.2.8 as follows:***

After transmitting an MPDU that requires an ACK frame as a response (see Annex G), the STA shall wait for an ACKTimeout interval, with a value of aSIFSTime + aSlotTime + aPHY-RX-START-Delay, starting at the PHY-TXEND.confirm primitive. If a PHY-RXSTART.indication primitive does not occur during the ACKTimeout interval, the STA concludes that the transmission of the MPDU has failed, and this STA shall invoke its backoff procedure upon expiration of the ACKTimeout interval. If a PHY-RXSTART.indication primitive does occur during the ACKTimeout interval, the STA shall wait for the corresponding PHYRXEND.indication primitive to determine whether the MPDU transmission was successful. The recognition of a valid ACK frame sent by the recipient of the MPDU requiring acknowledgment, corresponding to this PHYRXEND.indication primitive, shall be interpreted as successful acknowledgment, permitting the frame sequence to continue, or to end without retries, as appropriate for the particular frame sequence in progress. The recognition of anything else, including any other valid frame except as defined below, shall be interpreted as failure of the MPDU transmission. In this instance, the STA shall invoke its backoff procedure at the PHY-RXEND.indication primitive and may process the received frame. An exception is that recognition of a valid data frame sent by the recipient of a PS-Poll frame shall also be accepted as successful acknowledgment of the PS-Poll frame.

Additional exceptions exist for S1G STAs for accepting a valid frame as successful acknowledgement as described in the following two paragraphs: (#303)

Under TXOP sharing relay operation as described in 9.48.3 (Procedures of TXOP sharing for relay operation): If an MPDU is transmitted by a STA associated with a relay AP under TXOP sharing relay operation, and the PARTIAL\_AID in the PHY-RXSTART.indication primitive that occurs within aPHY-RX-START-delay is identical to the PARTIAL\_AID corresponding to the BSSID of the root AP then the reception shall be accepted as a successful acknowledgement of the MPDU transmission. In addition, when an AP transmits an MPDU to a Relay STA under TXOP sharing relay operation and the PARTIAL\_AID in the PHY-RXSTART.indication primitive that occurs within aPHY-RX-START-delay is identical to the PARTIAL\_AID corresponding to the DA of the transmitted MPDU shall be accepted as a successful acknowledgement of the MPDU transmission.

Under Speed Frame Exchange operation as described in 9.44 (Speed Frame Exchange): If a data frame is sent as an immediate response to an MPDU requiring acknowledgement, the successful reception of the response frame shall be accepted as successful acknowledgement of the eliciting MPDU.

***Insert the following paragraphs at the end of subclause 9.3.2.8 as follows:***

An S1G STA shall transmit NDP ACK frames for acknowledgement with the following exceptions:

1. transmission of an ACK frame is required if link adaptation procedure is negotiated as described in 9.29 (Link adaptation).
2. transmission of a TACK or a STACK frame is required if Target Wake Time is negotiated as described in 9.41 (Target Wake Time (TWT)).
3. transmission of a TACK is required as a response to a PS-Poll frame with the Poll Type subfield equal to 1 as described in 9.42.3 (Rescheduling of awake/doze cycle)
4. transmission of an NDP Modified ACK is required as a response to an NDP PS-Poll

The S1G STA that satisfies any of the first three exceptions above shall transmit an ACK, TACK, or STACK frame instead of an NDP ACK frame as a response to an eliciting PPDU for which the RXVECTOR parameter RESPONSE\_INDICATION is equal to Normal Response.

A non-S1G STA shall not transmit NDP ACK frames.

An S1G STA that transmits or receives an NDP ACK or NDP Modified ACK frame shall follow the same rules described above for ACK frames with the following exceptions that apply only to NDP ACK and NDP Modified ACK frames:

1. An S1G STA that transmits an NDP ACK frame for acknowledgement shall generate the ACK ID field of the NDP ACK frame as described in 8.3.5.1.3 (NDP ACK).
2. An S1G AP that transmits an NDP Modified ACK frame for acknowledgment of an NDP PS-Poll frame shall generate the ACK ID field of the NDP Modified ACK frame as described in 8.3.5.1.4 (NDP Modified ACK). In addition, if the eliciting NDP PS-Poll is an NDP PS-Poll (1 MHz) frame the Duration field of the NDP Modified ACK (1MHz) is set as follows:
	1. If the eliciting NDP PS-Poll (1MHz) frame has a value of the Preferred MCS field equal to “No Preference” the Duration field should indicate an idle period (i.e., the Duration Indication field should be set to 1 as described in 8.3.5.1.4 (NDP Modified ACK)).
	2. Otherwise, the Duration field should indicate an ACK ID extension (i.e., the Duration Indication field should be set to 0 as described in 8.3.5.1.4 (NDP Modified ACK).
3. An S1G STA that expects an NDP ACK frame as a response, shall consider a received NDP ACK frame as a successful response if the ACK ID field of the NDP ACK frame equals the bit sequence generated from the Scrambler Initialization value and the FCS field of its immediately previously transmitted PSDU as described in 8.3.5.1.3 (NDP ACK).
4. An S1G STA that expects an NDP Modified ACK frame as a response to an NDP PS-Poll, shall consider a received NDP Modified ACK frame as a successful response if the ACK ID field of the frame equals the bit sequence generated from the RA, TA and CRC fields of its immediately previously transmitted NDP PS-Poll frame as described in 8.3.5.1.4 (NDP Modified ACK).

Upon successful reception of a short frame that requires acknowledgment with the From DS field equal to 1, an S1G STA shall generate an acknowledgement frame in response if the AID subfield of A1 field is equal to the AID of the S1G STA and the A2 field is equal to the MAC address of its associated AP. Upon successful reception of a short frame that requires acknowledgement with the From DS field equal to 0, an S1G STA shall generate an acknowledgement frame in response if A1 field is equal to the MAC address of the S1G STA.In an S1G BSS, the ACKTimeout interval is varied by the TXVECTOR parameter PREAMBLE\_TYPE. When the TXVECTOR parameter PREAMBLE\_TYPE is equal to >= 2MHz short/long preamble, the ACKTimeout interval is calculated with aPHY-RX-START-Delay value for >= 2MHz short/long preamble except when the receiving STA has indicated use of 1MHz control responses as described in 9.7.6.6 (Channel Width selection for control frames) in which case the ACKTimeout interval is calculated with aPHY-RX-START-Delay value for 1MHz preamble. When the TXVECTOR parameter PREAMBLE\_TYPE is equal to 1MHz preamble, the ACKTimeout interval is calculated with aPHY-RX-START-Delay value for 1MHz preamble.