IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB 200 Comment Resolution for Clause 9.3.2.4a | | | | |
| Date: 2014-03-03 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Alfred Asterjadhi | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92109 | +1-858-658-5302 | aasterja@qti.qualcomm.com |
| Amin Jafarian | Qualcomm Inc. |  |  | jafarian@qti.qualcomm.com |

Abstract

This submission proposes resolutions for comments in clause 9.3.2.4a of TGah Draft 1.0 with the following CIDs:

1178, 1466, 1467, 1468, 1646, 1712, 1713, 2164, 2452, 2651, 2746, 2778, 2781, 2857, 2858, 2898

Revisions:

Rev 0 – Initial version of the document

Rev 1 – Addressed some comments received during the discussion of rev 0 of this 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 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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **P.L** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 1178 | 154.55 | 9.3.2.4A | "the S1G STA shall set the RID counter by using the RESPONSE\_INDICATION values per type of NDP MAC frame"  I really don't understand how a microsecond timer can be set to the value "NDP response" (for example). You are missing a reference to something that maps the type of response to a duratin. | Add missing rules or reference them to determine durations of the diffent types of RESPONSE\_INDICATION. | Revised –  Agree in principle with the commenter. Resolution clarifies that for NDP MAC frames “…shall update its RID counter based on the value of the RXVECTOR parameter … and RESPONSE\_INDICATION value.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1466 | 153.50 | 9.3.2.4a | S1G STAs update the RID counter based on several values of the RXVECTOR parameters which does not include the PARTIAL\_AID parameter. However, including a COLOR code that helps identify the BSS it is very beneficial to include it in RID update rules. Also refer to the RXTIME to start the RID as it is a more precise indication of the end of current PPDU. | Add rules to enable RID update filtering based on COLOR parameter for >=2MHz preambles. | Revised –  Agree in principle with the commenter. Resolution adds rules as suggested by commenter**.** See discussion below.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1467 | 153.55 | 9.3.2.4a | If the value of the R\_indication is Long Response the RID counter is set to MaxPPDUTxTime which is described as the maximum duration of the PPDU in microseconds and refers to subclause 24.4.4. But there is no such parameter in that subclause. There is instead an aPPDUMaxTime, which however is expressed in ms, but described in microseconds in the note. Also, given that an exchange cannot exceed the TXOP limit specify that the RID for a Long Response is set to the TXOP limit value. | When the RESPONSE\_INDICATION is Long Response the RID counter is set to an amount of time equal to TXOP limit. Change MaxPPDUTxTime to aPPDUMaxTime. Also specify that the Duration field needs to indicate non-zero value to reset the RID in line 48 of page 153 because the duration may be 0 but have a special meaning (see e.g. NDP ACK). | Revised –  Agree in principle with the commenter. Resolution accounts for the proposed changes.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1468 | 155.20 | 9.3.2.4a | NDP Beamforming Report Poll has a Response Indication field that indicates either Long Response or No Response. However this indication is missing in Table 9-1b. Also NDP BA should be NDP BlockAck. Also NDP Probe Request don't solicit any immediate response. | Replace the text in the second column of the 6th row of Table 9-1b (corresponding to NDP Beamforming Report Poll) with the following: "Long Response if Response Indication field value is 3  No Response if Response Indication field value is 0". Also replace "NDP BA" with "NDP BlockAck" in Table 9-1b.  Replace "NDP Response" with "No Response" in the 2nd column of the last row of Table 9-1b. | Revised –  Proposed resolution accounts for suggested changes.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1646 | 155.28 | 9.3.2.4a | RID operation is still a little hard to follow. | Create RID figure and text, similar to Figure 9-4, which is for the NAV. New RID figure and text to be for Setting and resetting the RID. | Revised –  Agree in principle with the commenter. Proposed resolution is to add a figure to illustrate RID setting.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1712 | 154.55 | 9.3.2.4a | The text says "the S1G STA shall set the RID counter ... as described in Table 9-1b" -- but table 9-1b does not specify how the RID counter shall be set. | Supply the specification of how the RID counter shall be set. | Agree in principle with the commenter. Resolution is to specify that “the S1G STA shall update its RID counter based on the RXVECTOR parameters…” In addition Table 9-1b is moved immediately after the second paragraph of the sublcause to have the description of the RID counter for both non-NDP and NDP frames in the same location.  Revised –  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 1713 | 154.62 | 9.3.2.4a | The NOTE "NDP MAC frames, that include a Duration field which sets the NAV have an RESPONSE\_INDICATION value of No Response in order to ..." is too confused to be worthwhile | Delete the NOTE that begins on line 62. | Revised –  Proposed resolution accounts for suggested changes.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2164 | 153.53 | 9.3.2.4a | To calculate PSDU length, RXVECTOR parameter LENGTH seems not to be correct because this parameter is presented only when AGGREGATION parameter is AGGREGATED. Correct RXVECTOR parameter should be PSDU\_LENGTH. | Change "LENGTH" to "PSDU\_LENGTH." | Revised –  Agree in principle with the commenter. Proposed resolution is to refer to correct RXVECTOR parameter.  TGah editor to make changes shown in 14/0282r1 under the heading for CIDs starting with 1178. |
| 2452 | 153.44 | 9.3.2.4a | Spurious apostrophe. Ditto at 231.24 | Just "parameters" | Revised –  TGah editor to replace “parameters’” with “parameters” (i.e., remove apostrophe) throughout the draft to become D2.0 of 11ah. |
| 2651 | 153.00 | 9.3.2.4a | The term RID is confusing as to what it does or why it is needed. Other terms: response as a synomym of acknowledge and no response as a synomym of no acknowlege are also confusing. The terms long response and response delayed are very confusing. | First, justify the system need for long response and response deferal and make clear how they are different from acknowledge, no acknowledge. Suggest using delayed acknowledge, if needed. | Revised –  RID counter acts as the NAV counter with the difference that it uses signalling available in the PHY Preamble rather than the duration field in the MAC header. For further clarifications see 12/119r0, 12/834r0, and 13/512r0. Proposed resolution in this document adds a figure to illustrate the RID counter setting as suggested in CID 1646.  TGah editor to make changes shown in 14/0282r1 under the heading for CIDs starting with 1178. |
| 2746 | 155.25 | 9.3.2.4a | RESPONSE\_INDICATION value for NDP Response Request is No Response | Change "NDP Response" to "No Response" | Revised –  Proposed resolution accounts for suggested changes.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2778 | 153.50 | 9.3.2.4a | RID value may not be updated for each received frame. If a larger RID value is replaced with a new RID value that is much smaller, the protection for other STA's channel access based on RID value update may be not enough. | please clarify the setting and resetting of RID | Agree in principle with the commenter. Resolution adds rules as suggested by commenter.  Revised –  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2781 | 153.43 | 9.3.2.4a | RID value may not be reset for each received frame with Duration. If a larger RID value is reset by the reception of a frame with a small NAV, the protection for other STA's channel access may be not enough. | please clarify the setting and resetting of RID | Revised –  Same resolution as CID 2778.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2857 | 154.12 | 9.3.2.4a | In Table 9-1a, the max size of a ACK control frame (the TACK frame including the Next TWT) is 32 bytes, it is not 14 bytes. Because the max size of ACK control frame and Block ACK control frame is equal, the AGGREGATION column is not needed and two rows for ACK and Block ACK can be merged. | Also, update the 9.3.2.4a because the RXVECTOR parameter AGGREGATION is not used for RID counter calculation. | Revised –  The STA can send an ACK or a STACK that both are 14 Bytes long, or can send a TACK or BAT, or BlockAck that are 32 bytes long to an eliciting frame that has the RXVECTOR parameter RESPONSE\_INDICATION equal to Normal Response.  Proposed resolution is to better clarify these cases  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2858 | 155.25 | 9.3.2.4a | The response type of the NDP Probe Request is no response. The RESPONSE\_INDICATION value of the NDP Probe Request in Table 9-1b should be changed to "No Response". | Change the RESPONSE\_INDICATION value of the NDP Probe Request in Table 9-1b from "NDP Response" to "No Response". | Revised –  Proposed resolution accounts for suggested changes.  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |
| 2898 | 153.57 | 9.3.2.4a | MaxPPDUTxTime is not defined in 24.4.4. It defines aPPDUMaxTime instead.It needs further clarification. | As mentioned in the Comment. | Agree in principle with the commenter. Resolution is the same as the one proposed for CID 1467.  Revised –  TGah Editor to make changes shown in 14/0282r1 under the heading for CIDs from 1178 to 2898. |

**Discussion:** *None*

**Instructions to TGah Editor*: Move Table 9-1b immediately after the second paragraph of subclause 9.3.2.4a.***

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

* **Setting and resetting the RID(#303)**

This subclause describes the setting and resetting of the RID for S1G STAs.

An S1G STA that receives a frame that is not an NDP MAC frame, shall update its RID counter based on the values of the RXVECTOR parameters' FORMAT, PREAMBLE\_TYPE, RESPONSE\_INDICATION, AGGREGATION, MCS, PARTIAL\_AID, COLOR, UPLINK\_INDICATION, and CH\_BANDWITH of the received frame as described in this clause. An S1G STA that receives an NDP MAC frame shall update its RID counter based on the value of the RXVECTOR parameter FORMAT, PREAMBLE\_TYPE and the RESPONSE\_INDICATION value which is defined per type of NDP MAC frame in Table 9-1b (RESPONSE\_INDICATION value for NDP MAC frames).

***Note to TGah Editor: Table 9-1b to be added here.***

The S1G STA shall reset its RID counter when the RX-START.indication primitive is received if the received PPDU is a member PPDU and it shall not reset the RID counter if the received PPDU is a non-member PPDU, then the S1G STA shall update the RID counter, i.e. set it to a new value (as defined in 9.3.2.4a.1) that is not less than the value that the RID counter will have at the end of the received PPDU.

The S1G STA shall classify a received PPDU as a member PPDU if it is an NDP MAC frame, or an S1G 1M PPDU, or a PPDU for which the PREAMBLE\_TYPE is either S1G\_LONG\_PREAMBLE or S1G\_SHORT\_PREAMBLE and either of the conditions below is satisfied:

* UPLINK\_INDICATION is 1 and the PARTIAL\_AID indicates that the PPDU is addressed to the AP with which the non-AP STA is associated
* UPLINK\_INDICATION is 0 and the COLOR indicates that the PPDU is generated by the AP with which the STA is associated

Otherwise, the S1G STA shall consider the PPDU as a non-member PPDU.

An S1G STA that has classified a PPDU as a member PPDU may additionally account for information contained in a valid MAC header from an MPDU carried in the received PPDU to differentiate between a non-member and member PPDU.

NOTE – If the PHY-RXEND.indication primitive for the received S1G PPDU contains an ERROR or FormatViolation then the S1G STA sets the EIFS as described in 9.3.7 (DCF timing).

The RID counter shall start at the end of the received PPDU which contains the PSDU, except when the PPDU either contains a valid nonzero Duration field that updates the NAV as described in 9.3.2.4 (Setting and resetting the NAV) or it is intended to the S1G STA in which cases the RID shall be reset.

The received PPDU has an expected duration, in microseconds, of PSDU\_RXTIME, starting from the moment the PHY-RXSTART.indication primitive is received. If the PPDU is not an NDP MAC frame the PSDU\_RXTIME is calculated based on multiple RXVECTOR parameters including PSDU\_LENGTH. If the PPDU is an NDP MAC frame the PSDU\_RXTIME is equal to 0.Figure 9-5a (Data/Ack and RID setting) indicates the RID for STAs that receive the PLCP Header of the Data frame. The RID for STAs that only receive the PLCP Header of the Ack frame is omitted in the figure because it is 0 (i.e., no response is expected to the Ack frame in this example) while the RID is reset for the STA to which the Data was addressed. (#304)



**Figure 9-5a – Data/Ack with RID setting**

**9.3.2.4a.1 RID update**

An S1G STA updates the value of the RID counter by setting it as described below:

* If the value of the RESPONSE\_INDICATION parameter is Long Response, the RID counter shall be set to LongTxTime + aSIFSTime where LongTxTime is obtained as follows: If FORMAT is either S1G or S1G\_DUP\_1M and CH\_BANDWIDTH is CBW1 then LongTxTime is equal to the S1G PPDU Duration as defined in Table 8-13c (Maximum data unit sizes (in octets) and durations (in microseconds))
* If FORMAT is either S1G or S1G\_DUP\_2M and PREAMBLE\_TYPE is either S1G\_SHORT\_PREAMBLE or S1G\_LONG\_PREAMBLE then LongTxTime is equal to the largest value in the dot11EDCATableTXOPLimit

If the value of the RESPONSE\_INDICATION parameter is Normal Response, the RID counter shall be set to NormalTxTime + aSIFSTime. NormalTxTime is calculated based on the RXVECTOR parameters PREAMBLE\_TYPE, AGGREGATION, MCS and CH\_BANDWIDTH following the rules listed in Table 9-1a (NormalTXTime duration based on RXVECTOR's parameters).

|  |  |  |  |
| --- | --- | --- | --- |
| * **NormalTXTime duration based on RXVECTOR's parameters** | | | |
| **PPDU format (see 24.1.4 (PPDU formats))** | **AGGREGATION** | **Expected Response Length (Type)** | **NormalTxTime** |
| S1G\_1M | 0 | 14 Bytes MPDU (ACK) | The time, in microseconds, required to transmit one ACK frame, where the duration of the frame is calculated according to the rate selection rules described in 9.7.6.5 (Rate selection for control response frames) using its BSSBasicMCSSet parameter and with CH\_BANDWIDTH RXVECTOR value equal to CBW1 |
| 1 | 32 Bytes MPDU (BlockAck) | The time, in microseconds, required to transmit one BlockACK frame, where the duration of the frame is calculated according to the rate selection rules described in 9.7.6.5 (Rate selection for control response frames) using its BSSBasicMCSSet parameter and with CH\_BANDWIDTH RXVECTOR value equal to CBW1. |
| S1G\_SHORT or  S1G\_LONG\_PREAMBLE | 0 | 14 Bytes MPDU (ACK) | The time, in microseconds, required to transmit one ACK frame, where the duration of the frame is calculated according to the rate selection rules described in 9.7.6.5 (Rate selection for control response frames) using its BSSBasicMCSSet parameter and channel width selection rules for control frames described in 9.7.6.6 (Channel Width selection for Control frames). |
| 1 | 32 Bytes MPDU (BlockAck) | The time, in microseconds, required to transmit one BlockAck frame, where the duration of the frame is calculated according to the rate selection rules described in 9.7.6.5 (Rate selection for control response frames) using its BSSBasicMCSSet parameter and channel width selection rules for control frames described in 9.7.6.6 (Channel Width selection for Control frames). |

If the value of RESPONSE\_INDICATION parameter is NDP Response, the RID counter shall be set to NDPTxTime + aSIFSTime. NDPTxTime is calculated based on the RXVECTOR parameter PREAMBLE\_TYPE and is equal to the time in microseconds, required to transmit either an NDP\_1M MAC frame if the PPDU format is S1G\_1M or an NDP\_2M MAC frame if PPDU format is either S1G\_SHORT or S1G\_LONG (see 24.1.4 (PPDU formats).

If the value of the RESPONSE\_INDICATION parameter is No Response, the RID counter shall be set to 0.

|  |  |
| --- | --- |
| * **RESPONSE\_INDICATION value for NDP MAC frames** | |
| **NDP MAC Frame type** | **RESPONSE\_INDICATION value** |
| NDP ACK, NDP Modified ACK | No Response if either Duration Indication field value is 0 or the Duration field value is not 0  Long Response if Duration Indication field value is 1 and Duration field value is 0 |
| NDP BlockAck | No Response |
| NDP CTS | No Response |
| NDP PS-Poll | NDP Response |
| NDP Beamforming Report Poll | Long Response |
| NDP Paging | No Response |
| NDP Probe Request | No Response |

**Instructions to TGah Editor*: Insert the following paragraphs immediately after the 3rd paragraph of subclause 9.3.2.13 (Response Indication procedure):***

An S1G STA transmitting an eliciting frame for which it expects a response that is a BAT or BlockAck frame as described in 9.22.7 (HT-Immediate Block Ack extensions) or a TACK frame as described in 9.41 (Target Wake Time (TWT)) and 9.42.2 (Rescheduling of awake/doze cycle) shall carry the eliciting frame in an A-MPDU or in a VHT Single MPDU (i.e., sets the TXVECTOR parameter AGGREGATION to 1). The intended recipient selects the type of control response frame based on the type of the eliciting frame and other information available in the PSDU such as Ack Policy field, EOF field etc.

An S1G STA transmitting an eliciting frame for which it expects a response that is an Ack frame as described in 9.29 (Link adaptation) or a STACK frame as described in 9.41 (Target Wake Time (TWT)) shall carry the eliciting frame in an MPDU (i.e., sets the TXVECTOR parameter AGGREGATION to 0).

An S1G STA transmitting a CF-End frame shall set the TXVECTOR parameter RESPONSE\_INDICATION to No Response.

**Instructions to TGah Editor*: Change the following definition to subclause 3.2 (Definitions specific to IEEE 802.11) of IEEE802.11ac D5.0:***

**very high throughput (VHT) single medium access control (MAC) protocol data unit (VHT single**

**MPDU)**: An MPDU that is the only MPDU in an A-MPDU carried in a VHT or S1G PPDU and that is carried in an A-MPDU subframe with the EOF subfield of the MPDU delimiter field equal to 1.

**Instructions to TGah Editor*: Change the following row in Table 8-283 (A-MPDU Contexts) of IEEE802.11ac D5.0:***

|  |  |  |
| --- | --- | --- |
| VHT single MPDU context | The A-MPDU is transmitted within a VHT or S1G PPDU and contains a VHT single MPDU. | Table 8-288 (A-MPDU contents in the VHT single MPDU context) |