IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Resolutions to various CIDs in clause 9 | | | | |
| Date: February 16, 2018 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |

Abstract

This submission proposes resolutions for following CID received for TGax LB230 (15):

13975, 11175, 12859, 12860, 11009, 11010, 11373, 11012, 11017, 11018, 11019, 11024, 11970, 13755, 12987

Revisions:

* Rev 0: Initial version of the 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 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.***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 13975 | Youhan Kim | 132.50 | 9.4.2.237.1 | The HE Capabilities indicates the capabilities of the STA in the current channel it is operating in. | Change "The HE Capabilities element contains a number of fields that are used to advertise the HE capabilities of an HE STA." to "The HE Capabilities element contains a number of fields that are used to advertise the HE capabilities of an HE STA in the current operating channel." | Accept  Agree with the change.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 13975** |
| 11175 | Albert Petrick | 132.65 | 9.4.2.237.1 | In Table 9-589cj (HE Capabilities element format) the Element ID, Length, and Element ID Extension fields are not defined and point to clause 9.4.2.1 | Define each field and place in clause 9.4.2.1 | Reject  Section 9.4.2.1 provides the definition of each of these fields. All element formats are described in this manner |
| 12859 | Mark RISON | 133.61 | 9.4.2.237.2 | Should be clearer that UMRS Support, Trigger Frame MAC Padding Duration, Group Addressed Multi-STA BlockAck In DL MU Support, Rx Control Frame to MultiBSS, BSRP BQRP A-MPDU Aggregation, NDP Feedback Report Support only apply to non-AP STAs | Add "Reserved when transmitted by an AP" to the end of the rightmost cell for each of these | Revised  Agree with the comment. The rows cited by the comment are updated to indicate that the subfield applies only to a non-AP STA and that the subfield is reserved when the element is transmitted by an AP.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 12859** |
| 12860 | Mark RISON | 134.06 | 9.4.2.237.2 | "carried in a QoS Data, QoS Null, or Management frame" -- can't be in anything else! | Delete the cited text | Revised  For clarity sake, it is better to list out the frames that carry this field. Further updated section 9.2.4.6.1 to indicate the QoS Null frame may also carry HT Control field.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 12860** |
| 11009 | Abhishek Patil | 135.04 | 9.4.2.237.2 | Update the text in 'Encoding' column to indicate that value in 'Trigger Frame MAC Padding Duration' applies only to non-AP HE STAs and that it is reserved for an HE AP. | Replace the text in the 'Encoding' column to: "If the STA is a non-AP STA:  Set to 0 to indicate no additional processing time.  Set to 1 to indicate 8 us of processing time.  Set to 2 to indicate 16 us of processing time.  The value 3 is reserved+F14 Reserved if the STA is an AP" | Revised  Agree with the comment. The row is updated to indicate that the subfield applies only to a non-AP STA and that the subfield is reserved when the element is transmitted by an AP.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11009** |
| 11010 | Abhishek Patil | 135.04 | 9.4.2.237.2 | The definition of 'Trigger Frame MAC Padding Duration' is not clear. What is meant by 'additional amount of time'? | Replace the text in 'Definition' column to: "Indicates the amount of time (defined as MinTrigProcTime in microseconds), from the end of the User Info field addressed to the STA until the end of the PPDU that carried the Trigger frame, needed by the STA to process the Trigger frame. Also see section 27.5.3.2.2 (Padding for Trigger frame or frame containing UMRS Control field)" | Revised  Agree with the comment. Revised text to provide additional clarification. Also referred to section 275.3.2.2 which provides details on padding.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11010** |
| 11373 | Bibhu Mohanty | 93.09 | 9.3.1.23 | Provide reference to section Table 9-262z (in section 9.4.2.237.2) where MinTrigProcTime is defined and remove reference to section 27 where rules for padding length are described | Replace sentence as: "For a non-HT PPDU, HT PPDU and VHT PPDU, the length of the Padding field (in octets)), which depends on the MinTrigProcTime (see Table 9-262z (Subfields of the HE MAC Capabilities Information field)), is given by Equation (9-0a)." | Revised  Agree with the comment. Replaced reference for MinTrigProcTime to table 9-262z instead of 27.5.3.2.2.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11373** |
| 11012 | Abhishek Patil | 135.37 | 9.4.2.237.2 | UMRS Support field applies only to non-AP HE STA | Replace the text in the 'Encoding' column to: "If the STA is a non-AP STA and +HTC-HE Support is 1:  Set to 1 if the STA supports reception of the UMRS Control field.  Set to 0 otherwise. Reserved if +HTC-HE Support is 0 or the STA is an AP." | Revised  Agree with the comment. The row is updated to indicate that the subfield applies only to a non-AP STA and that the subfield is reserved when the element is transmitted by an AP.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11012** |
| 11017 | Abhishek Patil | 137.04 | 9.4.2.237.2 | BSRP BQRP A-MPDU Aggregation subfield applies only to non-AP STA | Replace text in 'Encoding' column to: "For a non-AP STA:  Set to 1 if supported.  Set to 0 otherwise. Reserved for an AP" | Revised  Agree with the comment. The row is updated to indicate that the subfield applies only to a non-AP STA and that the subfield is reserved when the element is transmitted by an AP.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11017** |
| 11018 | Abhishek Patil | 137.27 | 9.4.2.237.2 | NDP Feedback Report Support subfield applies only to a non-AP STA. | Replace text in 'Encoding' column to: "For a non-AP STA:  Set to 1 if supported.  Set to 0 otherwise. Reserved for an AP" | Reject  The ability for an AP to advertise its capabilities to support NDP feedback mechanism can be useful for a non-AP STA that supports this feature during AP selection/association. |
| 11019 | Abhishek Patil | 137.33 | 9.4.2.237.2 | OPS Support subfield applies only if the STA supports Broadcast TWT | Replace text in 'Encoding' column to: "If Broadcast TWT Support subfield is 1  Set to 1 if supported.  Set to 0 otherwise. Reserved otherwise." | Revised  Agree with the comment. The row is updated to indicate that the subfield applies only when the STA has indicated support for Broadcast TWT.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11019** |
| 11024 | Abhishek Patil | 150.07 | 9.4.2.238 | TWT Required subfield applies only to HE STAs that have declared support for TWT (see 27.7.1 P270L60) | Revise the sentence as follows: "The TWT Required subfield is set to 1 to indicate that the AP requires its associated non-AP HE STAs that have declared support for TWT to operate in the role of either TWT requesting STA, as described 27.7.2 (Individual TWT agreements), or TWT scheduled STA, as described in 27.7.3 (Broadcast TWT operation) and set to 0 otherwise." | Accept  Agree with the comment. Revised text to clarify that TWT Required applies only for the STAs that have indicated support for TWT.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11024** |
| 11970 | James Yee | 59.39 | 9.2.4.6.4.2 | "HE TB PPDU that follows" is ambiguous and should be replaced with "HE TB PPDU solicited by" | As suggested. | Revised  Agree with the comment.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 11970** |
| 13755 | Xiaofei Wang | 59.58 | 9.2.4.6.4.2 | It is not clear to what this "it" refers. Please clarify whether this "it" is the A-MPDU, or the preceeding PPDU. | Change ", and it might additionally" to "which might additionally" | Revised  Agree with the comment.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 13755** |
| 12987 | Massinissa Lalam | 69.42 | 9.2.6.4.6 | The two last sentences of the UPH Control subclause are a bit redundant "The Minimum Transmit Power Flag subfield indicates that the minimum transmit power for the current MCS is reached by the STA. The Minimum Transmit Power Flag subfield is set to 1 to indicate that the minimum transmit power for the current MCS is reached by the STA and set to 0 otherwise."  Please delete the first one which does not clarify the setting of this subfield, keeping only "The Minimum Transmit Power Flag subfield is set to 1 to indicate that the minimum transmit power for the current MCS is reached by the STA and set to 0 otherwise. | As in comment | Revised  Agree with the comment. Removed redundant sentence.  **TGax editor, please make changes as shown in doc 11-18/0369r0 for CID 12987** |

* **HE Capabilities element**
* **General**

***TGax Editor: Please modify the 2nd paragraph of this section as follows:***

The HE Capabilities element contains a number of fields that are used to advertise the HE capabilities of an HE STA in the current operating channel[13975]. The HE Capabilities element is defined in Figure 9-589cj (HE Capabilities element format).

* HE MAC Capabilities Information field

***TGax Editor: Please make the changes as shown below to the corresponding rows in Table 9-262z:***

The subfields of the HE MAC Capabilities Information field are defined in Table 9-262z (Subfields of the HE MAC Capabilities Information field).

|  |  |  |
| --- | --- | --- |
| * **Subfields of the HE MAC Capabilities Information field** | | |
| **Subfield** | **Definition** | **Encoding** |
| Trigger Frame MAC Padding Duration | Indicates the additional amount of time (referred to as *MinTrigProcTime*), in microseconds, needed by the non-AP STA to process a received Trigger frame or a frame containing UMRS Control and prepare a response for transmission a SIFS after the frame is received (see 27.5.3.2.2 (Padding for Trigger frame or frame containing UMRS Control subfield).[11010] | For a non-AP STA:  Set to 0 to indicate no additional processing time.  Set to 1 to indicate 8 s of processing time.  Set to 2 to indicate 16 s of processing time.  The value 3 is reserved.  Reserved for an AP[12859, 11009] |
| UMRS Support | Indicates whether the non-AP STA supports receiving an MPDU that contains a UMRS Control subfield. | For a non-AP STA:  If +HTC-HE Support is 1:  Set to 1 if the STA supports reception of the UMRS Control subfield.  Set to 0 otherwise.  Reserved if +HTC-HE Support is 0.  Reserved for an AP[12859, 11012] |
| Group Addressed Multi-STA BlockAck In DL MU Support | For a non-AP STA, indicates support for the reception of a group-addressed Multi-STA BlockAck frame that is sent in a DL MU PPDU in a non-broadcast RU. | For a non-AP STA:  Set to 1 if the STA supports its reception.  Set to 0 otherwise.  Reserved for an AP[12859] |
| BSRP BQRP A-MPDU Aggregation | Indicates whether or not the non-AP STA accepts a BSRP Trigger frame or BQRP Trigger frame that is aggregated with other control, data and management frames in an A-MPDU destined to the STA | For a non-AP STA:  Set to 1 if supported.  Set to 0 otherwise.  Reserved for an AP.[12859, 11017] |
| OPS Support | For an AP, indicates support for encoding OPS information in the TIM element of FILS Discovery frames or TIM frames as described in 27.14.3.2 (AP operation for opportunistic power save). For a non-AP STA, indicates support for receiving the opportunistic power save encoded TIM elements. | If Broadcast TWT Support subfield is set to 1:  Set to 1 if STA supports OPS operation.  Set to 0 otherwise.  Reserved if Broadcast TWT Support subfield is set to 0.[11019] |

* **Padding for Trigger frame or frame containing UMRS Control subfield**

***TGax Editor: Please make the following change to the 1st paragraph in this section:***

An AP transmitting a PPDU that contains a Trigger frame or frame containing a UMRS Control subfield shall ensure that the duration of the PPDU that follows *BSYM* is greater than or equal to *MinTrigProcTime* indicated by the non-AP STA (see Table 9-262z)[11010]. *BSYM* is the OFDM symbol of the PPDU that contains either the last bit of *SCH* when BCC is used to encode the PSDU or the last coded bit of the LDPC codeword that encodes the last bit of *SCH* when LDPC is used to encode the PSDU, where *SCH* is either:

* The User Info field addressed to the STA of the last or only Trigger frame, or
* The UMRS Control subfield of the last or only frame.
* Trigger frame format[11373]

***TGax Editor: Please make the following change to the last two paragraphs in this section:***

For a non-HT PPDU, HT PPDU and VHT PPDU, the length of the Padding field (in octets)), which depends on the *MinTrigProcTime* indicated by the solicited non-AP STA (see Table 9-262z), is given by Equation (9-0b).



where



*NDBPS* is defined in Table 28-15 (Frequently used parameters)

For an HE PPDU, the length of the Padding field (in octets), which depends on the *MinTrigProcTime* indicated by the solicited non-AP STA (see Table 9-262z), is given by Equation (9-0c).



where

*NDBPS,SHORT* is defined in 28.3.11.2 (Pre-FEC padding process)

* **HT Control field**
* **General**

***TGax Editor: Please modify the 1st paragraph of this section as follows (from 802.11-2016 spec):***

The HT Control field is always present in a Control Wrapper frame and is present in QoS Data, QoS Null[12860] and Management frames as determined by the +HTC/Order subfield of the Frame Control field as defined in 9.2.4.1.10 (+HTC/Order subfield).

***Remove Figure 9-8 (HT Control field).***

***Insert Table 9-9a as follows:***

* HE Operation element

***TGax Editor: Please modify the 5th paragraph of this section as follows:***

The TWT Required subfield is set to 1 to indicate that the AP requires its associated non-AP HE STAs that have declared support for TWT (by setting any one of TWT Requester Support or TWT Responder Support or Broadcast TWT Support subfield in HE Capabilities element that it transmits to 1)[11024] to operate in the role of either TWT requesting STA, as described 27.7.2 (Individual TWT agreements), or TWT scheduled STA, as described in 27.7.3 (Broadcast TWT operation) and set to 0 otherwise.

* TWT operation
* General

***TGax Editor: Please modify the last paragraph of this section as follows:***

An HE AP may set the TWT Required subfield to 1 in HE Operation elements it transmits to request TWT participation by all HE STAs that are associated to it and that have declared support for TWT (by setting any one of TWT Requester Support or TWT Responder Support or Broadcast TWT Support subfield in HE Capabilities element that it transmits to 1)[11024]. A STA that supports TWT and is associated with an HE AP from which it receives an HE Operation element whose TWT Required subfield is 1 shall either negotiate individual TWT agreements, as defined in 27.7.2 (Individual TWT agreements), or participate in broadcast TWT operation, as defined in 27.7.3 (Broadcast TWT operation).

* **UMRS Control**

***TGax Editor: Please make the following changes to the 1st paragraph of this section as follows:***

If the Control ID subfield in a Control subfield of an A-Control subfield is 0, the Control Information subfield of the Control subfield contains UL MU response scheduling (UMRS) information for an HE TB PPDU that is solicited by[11970] the HE MU PPDU containing this Control Information subfield (see 27.5.3.2 (Rules for soliciting UL MU frames)). The format of the subfield is shown in Figure 9-15c (Control Information subfield for UMRS Control).

***TGax Editor: Please make the following changes to the note below figure 9-15c in this section as follows:***

NOTE—The A-MPDU contained in the HE TB PPDU carries one immediate acknowledgment, if the preceding PPDU solicits an acknowledgment. Further, the A-MPDU[13755] might additionally contain other frames that do not solicit immediate responses, such as QoS Null frames with Ack Policy of No Ack, Action No Ack frames, as defined in 27.5.3.3 (STA behavior for UL MU operation).

* **UPH Control**

***TGax Editor: Please make the following changes to the 1st paragraph of this section as follows:***

If the Control ID subfield in a Control subfield of an A-Control subfield is 4, then the Control Information subfield in the Control subfield contains the UL power headroom (UPH) used for power pre-correction (see 27.5.3.4 (A-MPDU contents in an HE TB PPDU)). The format of the subfield is shown in Figure 9-15h (Control Information subfield for UPH Control).

***TGax Editor: Please make the following changes to the 3rd paragraph of this section as follows:***

The Minimum Transmit Power Flag subfield is set to 1 to indicate that the minimum transmit power for the current MCS is reached by the STA and set to 0 otherwise.