`IEEE P802.11
Wireless LANs

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| HE Variant HT Control – Misc |
| Date: 2016-08-31 |
| 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 |
| Raja Banerjea | Qualcomm Inc |  |  | rajab@qca.qualcomm.com |

Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (**9 CIDs**):

* 2207, 857, 2611, 2612, 1429, 1434, 1435, 1817

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.***

# PARS I (Miscellaneous)

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 2207 | Tomoko Adachi | 14.05 | The A-Control subield has only 30 bits and can carry only two Control ID subfields at most. | Re-examine if the length of the A-Control subfield is enough. | Rejected –One Control ID subfield is generally enough for the basic operation as each control ID carries information for one particular feature. A STA that supports more than one feature (i.e., may need to deliver more than one Control ID subfield) can specify these values in separate PPDUs, or could use a Control frame that carries a variable length HT Control field as suggested by CID 161 (however this is out of scope for the purpose of this CID). This avoids having a variable length HT Control field in QoS Data and MGMT frames that would add to complexity due to dynamically changing MAC header lengths and would create backwards incompatibilities.  |
| 857 | Ju-Hyung Son |  | 11ax defined A-Control subfield in the HE Variant HT Control field to deliver various control information flexibly. However, the current A-MPDU aggreagation rule mandates to have the same HT Control field for all MPDUs in A-MPDU. This will incur unnecessary signaling overheads for A-Control subfields within A-MPDU. | Change text in line 9:"For HT and VHT STA, if the HT Control field is present in an MPDU aggregated in an A MPDU, then all MPDUs of the same frame type (i.e., having the same value for the Type subfield of the Frame Control field) aggregated in the same A MPDU shall contain an HT Control field. The HT Control field of all MPDUs containing the HT Control field aggregated in the same A MPDU shall be set to the same value.For HE STA, the HT Control field in an MPDU aggregated in an MPDU can be set to the different values." | Rejected –The presence of the same information in the HE variant HT Control field in the A-MPDU increases the robustness of delivering such information and simplifies the design since the receiver need only obtain one copy of such field for its operation. In addition it enables the STA to receive the control information in an unambiguous way (no need to check bitmap scores to determine which of these fields were received correctly) and without requiring additional memory for processing multiple HT Control fields that contain different information. |
|  |  |  |  |  |  |
| 2611 | Young Hoon Kwon | 45.36 | "+HTC-HE Support" subfield is not defined in the HE Capabilities in subclause 9.4.2.213. | Define the +HTC-HE Support subfield in HE Capabilities in subclause 9.4.2.213 or delete the whole sentence if this field is not to be defined. | Revised –Agree in principle with the comment. Proposed resolution is to define the subfield in the HE Capabilities element. TGax editor to make the changes shown in 11-16/1127r0 under all headings that include CID 2611. |
| 2612 | Young Hoon Kwon | 46.11 | As HE Control field can have aggregated information for multiple different purposes, it may not be efficient for all MPDUs in an A-MPDU having the same value of the HE control field contents. | Modify the text to "The HT Control field of all MPDUs containing the HT Control field aggregated in the same A MPDU shall be set to the same value except for the case that the HE variant HT Control field is carried in the MPDUs". | Rejected –The presence of the same information in the HE variant HT Control field in the A-MPDU increases the robustness of delivering such information and simplifies the design since the receiver need only obtain one copy of such field for its operation. In addition it enables the STA to receive the control information in an unambiguous way (no need to check bitmap scores to determine which of these fields were received correctly) and without requiring additional memory for processing multiple HT Control fields that contain different information. |
| 1429 | Mark RISON | 45.35 | "the +HTC-HE Support subfield of the HE Capabilies Information field" -- there is no such subfield | Refer to a subfield that exists (also at 45.59) | Revised –Agree in principle with the comment. Proposed resolution is to define the subfield in the HE Capabilities element. TGax editor to make the changes shown in 11-16/1127r0 under all headings that include CID 1429. |
| 1434 | Mark RISON | 45.41 | "A STA that has a value of true for at least one of dot11ULMUOFDMAOptionImplemented, dot11MCSFeedbackOptionImplemented, and dot11ROMIOptionImplemented shall set the dot11HEControlFieldOptionImplemented to true" -- I don't think that a non-HE STA that has dot11MCSFeedbackOptionImplemented true should be required to set dot11HEControlFieldOptionImplemented to true | Constrain the statement to HE STAs | Revised –Agree in principle with the comment. Proposed resolution constrains the statement to HE STAs. TGax editor to make the changes shown in 11-16/1127r0 under all headings that include CID 1434. |
| 1435 | Mark RISON | 45.63 | What if the STA does not have dot11ULMUOFDMAOptionImplemented equal to true? Ditto for the other two Control field flavours | Add a mechanism so that the HE variant HT Control transmitter knows whether the receiver supports UL OFDMA, and then make the statement conditional on that. Ditto for the other two statements below | Revised –Agree in principle with the commenter. Proposed resolution is to clarify that those MIB variables are HE related. Regarding the other parts I expect that the capabilities and clarifications will be added in their respective subclauses:* UL OFDMA supported in RX by non-AP STA, no support in RX from AP
* ROMI supported in RX by AP, optional support by non-AP STA
* Link Adaptation optional support by both.

TGax editor to make the changes shown in 11-16/1127r0 under all headings that include CID 1435. |
| 1817 | Rojan Chitrakar | 10.9 | The +HTC-HE Support subfield has not been defined in the HE capabilities element. | Define the +HTC-HE Support subfield in the HE capabilities element. | Revised –Agree in principle with the comment. Proposed resolution is to define the subfield in the HE Capabilities element. TGax editor to make the changes shown in 11-16/ 1127r0 under all headings that include CID 1817. |

**Discussion: *None.***

**TGax Editor: *Change the subclause below as follows (#CID 1434, 1435):***

## 10.9 HT Control field operation

If the value of dot11HTControlFieldSupported is true, a STA shall set the +HTC Support subfield of the HT Extended Capabilities field of the HT Capabilities element to 1 in HT Capabilities elements that it transmits. If the value of dot11VHTControlFieldOptionImplemented is true, a STA shall set the +HTC-VHT Support subfield of the VHT Capabilities Information field(#6472) of the VHT Capabilities element to 1 in VHT Capabilities elements that it transmits. If the value of the dot11HEControlFieldOptionImplemented is true, a STA shall set the +HTC-HE Support subfield of the HE Capabilies Information field of the HE Capabilities element to 1(11ac) in HE Capabilities elements that it transmits.

A STA that has a value of true for at least one of dot11RDResponderOptionImplemented, dot11MCSFeedbackOptionImplemented, and dot11AlternateEDCAActivated(#1054)(11aa) shall set dot11HTControlFieldSupported or dot11VHTControlFieldOptionImplemented or both(11ac) to true. A STA that has a value of true for at least one of dot11HEULMUOFDMAOptionImplemented, dot11HEMCSFeedbackOptionImplemented, and dot11HEROMIOptionImplemented shall set the dot11HEControlFieldOptionImplemented to true. *(#1434, 1435)*

An HT variant(11ac) HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-HT(11ac) in the HT Extended Capabilities field of its HT Capabilities element (see 9.4.2.55 (HT Capabilities element)).

A VHT variant HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-VHT in the VHT Capabilities Information field(#6472) of its VHT Capabilities element.(11ac)

NOTE—An HT STA that does not support +HTC (HT or VHT variant)(11ac) that receives a +HTC frame addressed to another STA still performs the CRC on the actual length of the MPDU and uses the Duration/ID field to update the NAV, as described in **Error! Reference source not found.**.

An HE variant HT Control field shall not be present in a frame addressed to a STA unless that STA declares support for +HTC-HE in the HE Capabilities Information field of its HE Capabilities element. The HE variant HT Control field carried in the frame may contain aControl subfield supported by the intended receiver that has:

* A value of 0 in the Control ID subfield when the transmitting STA expects an UL MU PPDU that carries an immediate acknowledgement, as described in 9.42.2 (UL MU operation).
* A value of 1 in the Control ID subfield when the transmitting STA changes the receive operation mode, as described in 10.45.2 (Receive operating mode indication).
* A value of 2 in the Control ID subfield when the transmitting STA follows the HE link adaptation procedure, as described in 10.31.4 (Link adaptation using the HE variant HT Control field).
* ...

If the HT Control field is present in an MPDU aggregated in an A‑MPDU, then all MPDUs of the same frame type (i.e., having the same value for the Type subfield of the Frame Control field) aggregated in the same A‑MPDU shall contain an HT Control field. The HT Control field of all MPDUs containing the HT Control field aggregated in the same A‑MPDU shall be set to the same value.

**9.4.2.213 HE Capabilities element**

**TGax Editor: *Change the figure below of this subclause as follows (#CID 1817, 1429, 2611):***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 | B1 | B2 | B3 B4 | B5 | B6 B15 |
|  | PPE Thresholds Present | TWT Requester Support | TWT Responder Support | Fragmentation Support | +HTC-HE Support | Reserved |
| Bits: | 1 | 1 | 1 | 2 | 1 | 11 |

Figure 9‑554b - HE Capabilities field format

**TGax Editor: *Insert a new paragraph at the end of this subclause as follows (#CID 1817, 1429, 2611):***

The +HTC-HE Support subfield is set to 1 to indicate that the HE STA supports the reception of an HE variant HT Control field carried in a QoS Data or Management frame; otherwise set to 0.*(#1817, 1429, 2611)*