IEEE P802.11
Wireless LANs

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| Comment resolutions for 9.3.1.20 |
| Date: 2018-01-05 |
| 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 |
| George Cherian | Qualcomm Inc. |  |  |  |
| Abhishek Patil | Qualcomm Inc. |  |  |  |
| Yongho Seok | MediaTek Inc.  |  |  | yongho.seok@mediatek.com |

Abstract

This submission proposes resolutions for multiple comments related to TGax D2.0 with the following CIDs:

* 11117, 11509, 11914, 12373, 13235, 13409, 13535, 13536, 13537, 13538,
* 14338 (11 CIDs)

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Include a clarification text of the TA field in the HE NDP Announcement frame.

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.***

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| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 11117 | Adrian Stephens | 83.14 | """The HE NDP Announcement uses the same Frame Control subtype as the VHT NDP Announcement.""As stated, this should be reflected in Table 9-1, but is not.What is the real name of this frame?Recommend treating this the same way that the variants of the Block Ack frames are treated." | "Define common structure in 93.1.20. Add new levels for VHT variant VHT NDP Announcement frame and HE variant VHT NDP Announcement frame.Review all uses of VHT NDP Announcement frame in the baseline and preceed with ""VHT variant""." | Revised –The frame is still a VHT NDP Announcement frame but as pointed out by the comment is namely an HE variant when the B1 is set to 1. In order to make this clear the proposed resolution is to add explicitly this terminology and specify that the reference HE NDPA frame refers to the HE variant VHT NDP Announcement frame.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 11117. |
| 11509 | Chunyu Hu | 83.39 | When RA is set to broadcast address, the only way to differentiate the HE trigger based sounding procedure from VHT sounding procedure is the Disambiguration bit in the STA info field of NDPA frame. It's best to define a new bit field to explicitly specify type. | as in the comment | Rejected –The differentiation between the two sounding sequences is based on the presence of the HE field of value 1 in the Sounding Dialog Token field, and the setting of the Disambiguation bit set to 1 in the User Info field that is intended to an HE STA. There is no ambiguity in the signaling that would need to define a new field to explicitly specify the type (but if you think of it we are already doing it because the HE field in the Sounding Dialog Token field is already a new bit field because before it was reserved). |
| 11914 | Huizhao Wang | 83.31 | Need to update the Figure 9-50, to define bit 1 set to 1 to indicate HE NDPA | Update the Figure 9-50 in base document to define bit 1 as indication of HE NDPA: 0 -- VHT NDPA, 1 -- HE NDPA | Revised –Agree in principle. Proposed resolution accounts for the suggested change.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 11914. |
| 12373 | Liwen Chu | 84.30 | When SU sounding feedback is solicited, these fields are reserved. | Change the paragraph per the comment. | Rejected –The fields are reserved only when the SU sounding feedback is being solicited with a non-TB sounding sequence. Otherwise (in TB sounding sequence) the fields are serving their intended purpose. |
| 13235 | Robert Stacey | 85.04 | Can SU feedback be returned using the TB sounding sequence? If so, the Nc field can't be reserved for SU. | Clarify (in 27.6.3) whether or not SU feedback can be returned in a TB sounding sequence. If so, define Nc for SU feedback. | Revised –Agree in principle with the comment. Proposed resolution clarifies that the NC is the number of columns Nc, similar to the MU case, when the sounding sequence is TB, and reserved if the sounding sequence is non-TB. TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13235. |
| 13409 | Sameer Vermani | 85.04 | What is the value of Nc when feedback type is CQI | Needs to be specified | Revised –Agree with the comment. Proposed resolution clarifies that for CQI the Nc field indicates the number of columns Nc, like the MU case.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13409. |
| 13535 | SUNGEUN LEE | 84.07 | RU1 is not the accurate description (RU 1 with space), and we have different sizes of RUs while baseline is 26-tone. The accurate RU naming is '26-tone RU n' | Change RU1 to '26-tone RU 1' and RU9 to '26-tone RU 9' | Revised –Accepted with minor editorial change.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13535. |
| 13536 | SUNGEUN LEE | 84.12 | RU1 is not the accurate description (RU 1 with space), and we have different sizes of RUs while baseline is 26-tone. The accurate RU naming is '26-tone RU n' | Change RU1 to '26-tone RU 1' and RU18 to '26-tone RU 18' | Revised –Accepted with minor editorial change.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13536. |
| 13537 | SUNGEUN LEE | 84.17 | RU1 is not the accurate description (RU 1 with space), and we have different sizes of RUs while baseline is 26-tone. The accurate RU naming is '26-tone RU n' | Change RU1 to '26-tone RU 1' and RU37 to '26-tone RU 37' | Revised –Accepted with minor editorial change.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13537. |
| 13538 | SUNGEUN LEE | 84.22 | RU1 is not the accurate description (RU 1 with space), and we have different sizes of RUs while baseline is 26-tone. The accurate RU naming is '26-tone RU n' | Change 'RU1 in the lower' to '26-tone RU 1 in the lower' and 'RU37 in the lower' to '26-tone RU 37 in the lower' and 'RU1 in the upper' to '26-tone RU 1 in the upper' and 'RU37 in the upper' to '26-tone RU 37 in the upper' | Revised –Accepted with minor editorial change.TGax editor to make the changes shown in 11-18/0008r1 under all headings that include CID 13538. |
| 14338 | Zhou Lan | 83.39 | When RA is set to broadcast address, the only way to differentiate the HE trigger based sounding procedure from VHT sounding procedure is the Disambiguration bit in the STA info field of NDPA frame. The error proabability is high with sigle bit indication. Clarify otherwise improve the robustness of the NDPA frame design. | as in the comment | Rejected –It is not clear what error probability the commenter is pointing out. Any frame (including its contents) are subject to errors that are due to collisions/low SNR, interference, etc. Since the comment targets the Disambiguation bit one could speculate that the intention was to refer to a case where a VHT STA may errouneously think that a portion of the STA Info field is intended to it? This is also not possible since 11ac STAs have an AID that spans from 1 to 2007, as such the disambiguation bit (which is 1 for HE frame) would shift the hypothetical AID values to values above 2048, where there are no VHT STAs. And the FCS of the frame ensures that this information if correctly received by any STA is reliable to make such a determination. |

**Discussion: *None.***

Change the title of 9.3.1.20 as follows:

* VHT/HE NDP Announcement frame format

**TGax Editor: *Change the paragraphs below of this subclause as follows:***

The TA field is set to the address of the STA transmitting the VHT/HE NDP Announcement frame or the bandwidth signaling TA of the STA transmitting the VHT/HE NDP Announcement frame. In a VHT/HE NDP Announcement frame transmitted by a VHT or HE STA in a non-HT or non-HT duplicate format and where the scrambling sequence carries the TXVECTOR parameter CH\_BANDWIDTH\_IN\_NON\_HT, the TA field is set to a bandwidth signaling TA.

The format of the Sounding Dialog Token field is shown in Figure 9-50 (Sounding Dialog Token field).

|  |  |  |  |
| --- | --- | --- | --- |
|  | B0 | B1 | B2 B7 |
|  | Reserved | HE | Sounding Dialog Token Number |
| Bits: | 1  | 1 | 6 |
| * Sounding Dialog Token field(11ac)
 |

The HE field is set to 0 to indicate a VHT NDP Announcement frame and is set to 1 to indicate an HE variant VHT NDP Announcement frame.(#11914, 11117)

The Sounding Dialog Token Number subfield in the Sounding Dialog Token field contains a value selected by the beamformer to identify the VHT NDP Announcement frame.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 11117):***

The HE NDP Announcement frame is the HE variant of the VHT NDP Announcement frame.(#11117). The frame format of the HE NDP Announcement frame is shown in Figure 9-51a (HE NDP Announcement frame format).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Frame Control | Duration | RA | TA | Sounding Dialog Token | STA Info 1 | … | STA Info *n* | FCS |
| Octets: | 2 | 2 | 6 | 6 | 1 | 4 |  | 4 | 4 |
| * HE NDP Announcement frame format
 |

(17/1081r2)The Duration, RA, TA and Sounding Dialog Token fields are set as in a VHT NDP Announcement frame, except that bit 1 of the Sounding Dialog Token is set to 1 to indicate an HE NDP Announcement frame.(17/1081r2)

The format of the STA Info field(#6282) in an HE NDP Announcement Frame is defined in Figure 9-51b (STA Info subfield format in an HE NDP Announcement frame).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0           B10 | B11          B24 | B25        B26 | B27 | B28 | B29        B31 |
|  | AID11 | Partial BW Info | Feedback Type And Ng | Disambiguation | Codebook Size | Nc |
| Bits: | 11 | 14 | 2 | 1 | 1 | 3 |
| * STA Info subfield format in an HE NDP Announcement frame
 |

An HE NDP Announcement frame contains at most 1 STA Info field per STA.(17/1081r2)

The AID11 subfield contains the 11 least significant bits of the AID of a STA expected to process the following HE NDP and prepare the sounding feedback.(17/1081r2)

The Partial BW Info subfield is defined in Figure 9-51c (Partial BW Info subfield).

|  |  |  |
| --- | --- | --- |
|  | B0                B6 | B7             B13 |
|  | RU Start Index | RU End Index |
| Bits: | 7 | 7 |
| * Partial BW Info subfield
 |

**TGax Editor: *Change the paragraphs below of this subclause as follows (#CID 13535, 13536, 13537, 13538):***

The RU Start Index subfield of the Partial BW subfield indicates the first 26-tone RU for which the HE beamformer is requesting feedback. The RU End Index subfield of the Partial BW subfield indicates the last 26-tone RU for which the HE beamformer is requesting feedback. The 26-tone RU is encoded in increasing order:(17/1081r2)

* For 20 MHz BW of the HE NDP Announcement frame, the 26-tone RU 1 is encoded as 0 and the 26-tone RU 9*(#13535)* is encoded as 8. Values 9–127 are reserved. See Table 28-6 (Data and pilot subcarrier indices for RUs in a 20 MHz HE PPDU).
* For 40 MHz BW of the HE NDP Announcement frame (possibly in non-HT Duplicate format), the 26-tone RU 1 is encoded as 0 and the 26-tone RU 18*(#13536)* is encoded as 17. Values 18–127 are reserved. See Table 28-7 (Data and pilot subcarrier indices for RUs in a 40 MHz HE PPDU).
* For 80 MHz BW of the HE NDP Announcement frame (possibly in non-HT Duplicate format), the 26-tone RU 1 is encoded as 0 and the 26-tone RU 37*(#13537)* is encoded as 36. Values 37–127 are reserved. See Table 28-8 (Data and pilot subcarrier indices for RUs in an 80 MHz HE PPDU).
* For 80+80 or 160 MHz BW of the HE NDP Announcement frame (possibly in non-HT Duplicate format), the 26-tone RU 1 in the lower 80 MHz segment is encoded as 0 and the 26-tone RU 37 in the lower 80 MHz segment is encoded as 36. The 26-tone RU 1 in the upper 80 MHz segment is encoded as 37 and the 26-tone RU 37*(#13538)* in the upper 80 MHz segment is encoded as 73. Values 74–127 are reserved. For 80+80 MHz, feedback is not requested for the gap between the 80 MHz segments. See Table 28-8 (Data and pilot subcarrier indices for RUs in an 80 MHz HE PPDU).

The Feedback Type And Ng and Codebook Size subfields are defined in Table 9-25a (Feedback Type And Ng subfield and Codebook Size subfield encoding).

|  |
| --- |
| * Feedback Type And Ng subfield and Codebook Size subfield encoding
 |
| Feedback Type And Ng | Codebook Size | Description |
| B25 | B26 | B28 |
| 0 | 0 | 0 | SU, *Ng* = 4, quantization resolution ( = {4, 2} |
| 0 | 0 | 1 | SU, *Ng* = 4, quantization resolution (= {6, 4} |
| 0 | 1 | 0 | SU, *Ng* = 16, quantization resolution (= {4, 2} |
| 0 | 1 | 1 | SU, *Ng* = 16, quantization resolution (= {6, 4} |
| 1 | 0 | 0 | MU, *Ng* = 4, quantization resolution (= {7, 5} |
| 1 | 0 | 1 | MU, *Ng* = 4, quantization resolution (= {9, 7} |
| 1 | 1 | 0 | CQI only feedback |
| 1 | 1 | 1 | MU, *Ng* = 16, quantization resolution (= {9, 7}(#7317) |

(17/1081r2)The Disambiguation subfield is set to 1 to prevent a non-HE VHT STA from wrongly determining its(#5005) AID in the NDP Announcement frame(#7319). The Disambiguation subfield coincides with the MSB of the AID12 subfield of an expected VHT NDP Announcement when the HE NDP Announcement field is parsed by a non-HE VHT STA. The MSB of the AID12 subfield is always 0 for a non-HE VHT STA due to the limitation of the AID to a maximum of 2007.

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 13409, 13235):***

If the HE NDP Announcement frame is sent during an HE TB sounding sequence then the Nc field indicates the number of columns Nc, in the Compressed Beamforming Feedback Matrix subfield minus 1, if the requested feedback type is MU, CQI, or SU. Set to 0 to request *Nc* = 1, set to 1 to request *Nc* = 2, ..., set to 7 to request *Nc* = 8. If the HE NDP Announcement frame is sent during an HE non-TB sounding sequence then the Nc field is reserved if the requested feedback type is SU.*(#13409, 13235)*

**10.7.6.6 Channel Width selection for Control frames**

**TGax Editor: *Change the paragraph below of this subclause as follows:***

The rules in this subclause, combined with the rules in 10.7.6.1 (General rules for rate selection for Control frames), determine the format of control response frames.

If a VHT or HE STA transmits to another VHT or HE STA a Control frame that is not an RTS frame or a CF-End frame, if that Control frame is an HE NDP Announcement frame or elicits a control response frame or a VHT Compressed Beamforming frame, and

— If the Control frame is transmitted in a non-HT duplicate PPDU (channel width 40 MHz or wider), the transmitting VHT or HE STA shall set the TA field to a bandwidth signaling TA.

— If the Control frame is transmitted in a non-HT PPDU (channel width 20 MHz), the transmitting VHT or HE STA may set the TA field to a bandwidth signaling TA.