IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Comment Resolutions on Clause 9.4.2.218.3 (HE PHY Capabilities)  Part 1 | | | | |
| Date: 2017-01-16 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Lochan Verma | Qualcomm Inc. | 5775 Morehouse Dr, San Diego, CA 92121 | +1-858-845-7832 | lverma@qti.qualcomm.com |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for the following comments on 9.4.2.218.3 (HE PHY Capabilities) of TGax D1.0:

3032, 3033, 3267, 3270, 3272, 3274, 3276, 3277, 3281, 3282,

3285, 3455, 3474, 3488, 3490, 3492, 3494, 3496, 3511, 3522,

3524, 3528, 3530, 3534, 3536, 3538, 3540, 3542, 3546, 3550,

3552, 5139, 5140, 5142, 5143, 5144, 5145, 5146, 7684, 7685,

7768, 7769, 7770, 7771, 7772, 7773, 8569, 8570, 8673, 6418,

6419, 6421, 6422, 6423, 6424, 9311, 9312, 9306, 9307, 9308,

9309, 9269, 8677, 8675

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Fixed a few typos

**SP#1: Do you agree to the resolution proposed in this document (11-17/0056r1) for the following CIDs?**

3032, 3033, 3267, 3270, 3272, 3274, 3276, 3277, 3281, 3282,

3285, 3455, 3474, 3488, 3490, 3492, 3494, 3496, 3511, 3522,

3524, 3528, 3530, 3534, 3536, 3538, 3540, 3542, 3546, 3550,

3552, 5139, 5140, 5142, 5143, 5144, 5145, 5146,

7768, 7769, 7770, 7771, 7772, 7773, 8569, 8570, 8673, 6418,

6419, 6421, 6422, 6423, 6424, 9311, 9312, 9306, 9307, 9308,

9309, 9269, 8677, 8675

SP#2: Do you agree to the resolution proposed in this document (11-17/0056r1) for the following CIDs?

7684, 7685

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** | **Clause Number** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 3032 | 9.4.2.218.3 | 82.14 | Channel width set allows a HE AP which also a STA to support only 20 MHz mode. Clarify that an HE AP shall support 20,40,80 MHz in 5GHz and 20,40 in 2.4 GHz. | P82.44 Insert a Note  "A HE AP shall support 20,40,80 MHz mode in 5GHz band." | Reject—    According to 11-16-1159r2:   1. For an AP operating in the 5 GHz band, support of 40/80 MHz bandwidth is mandatory. 2. For an AP operating in the 2.4 GHz band, support of 40 MHz bandwidth is optional.   Furthermore, Pg 82,ln 20 has a note, which refers to (1) above. |
| 3033 | 9.4.2.218.3 | 86.21 | What is the Power Boost Factor Support used for? | Define Power Boost factor | Reject—  Power boost factor is a PHY parameter defined in Clause 28 (e.g., 28.3.9 Pg 264, Ln 47.  Section 9.4.2.218.3 is strictly HE PHY capability indication without elaborating use and definitions of each of them. |
| 3267 | 9.4.2.218.3 | 84.06 | Add clarity and call out bit positions in Table 9-262aa for subfield "Beamforemee STS For < 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B34-B36 in Definition column  Change to: "B34-B36 indicates the maximum number of space-time streams the STA can receive in an HE NDP." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3267. |
| 3270 | 9.4.2.218.3 | 81.35 | In Figure 9-589cI - (HE PHY Capabilities Information field format) subfield "Number Of  Sounding Dimensions For > 80 MHz" is labeled as 1-bit. There are 3-bits (B49 -B51). | Change Bits "1" to "3" for subfield "NSTS Total for > 80 MHz" in Figure 9-589cI | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3270. |
| 3272 | 9.4.2.218.3 | 84.56 | Add clarity and call out bit positions in Table 9-262aa for subfield "NTST Total For < 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B37-B39 in Definition column  Change to: "B37-B39 indicates the maximum value for.....partial bandwidth." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3272. |
| 3274 | 9.4.2.218.3 | 83.06 | Add clarity. Call out bit positions in Table 9-262aa for subfield "Device Class" corresponding to those bit positions in Figure 9-589cI | In "Definition" column: Add "B12:" at the beginning of the sentence."  In the "Encoding" column: Before sentence Add "B12:" "Set to 1 to indicate STA is a Class A device."  In the "Encoding" column: Before sentence Add "B12:" Set to 0 to indicate STA is a Class B device. Note: This field is reserved when transmitting STA is an AP STA." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3274. |
| 3276 | 9.4.2.218.3 | 85.06 | Add clarity and call out bit positions in Table 9-262aa for subfield "Beamformee STS for > 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B40-B42 in Definition column Change to: "B40-B42 indicates the maximum number for.....HE NDP." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3276. |
| 3277 | 9.4.2.218.3 | 83.13 | Add clarity and call out bit positions in Table 9-262aa for subfield "LDPC Coding In Payload" corresponding to those bit positions in Figure 9-589cI | Change text in "Definition" column to read: "B13: Indicates support of transmission....."  Change text in "Encoding" column to read: "B13: Set to 1 to indicate STA.... B13: Set to 9 otherwise. " | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3277. |
| 3281 | 9.4.2.218.3 | 85.13 | Add clarity and call out bit positions in Table 9-262aa for subfield "NSTS Total For > 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B44-B45 in Definition column Change to: "B43-B45 indicates the maximum value for.....partial bandwidth." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3281. |
| 3282 | 9.4.2.218.3 | 83.16 | Add clarity and call out bit positions in Table 9-262 aa for subfield "HE-LTF And GI For HE PPDUs" corresponding to those bit positions in Figure 9-589cI | Change text in "Encoding column to read: "For B14 and B15: Set to 1 if supported by the STA. Set to 0 otherwise." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3282. |
| 3285 | 9.4.2.218.3 | 85.20 | Add clarity and call out bit positions in Table 9-262aa for subfield "Number Of Sounding Dimensions For < 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B46-B48 in Definition column Change to: "B46-B48 represents the beamformer's capability.....for an HE NDP." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3285. |
| 3455 | 9.4.2.218.3 | 81.35 | In Figure 9-589cI - (HE PHY Capabilities Information field format) subfield "Number Of Sounding Dimensions For < 80 MHz" is mark as having 1-bit. There are 3-bits (B46 -B48). | Change Bits "1" to "3" for subfield "NSTS Total for < 80 MHz" in Figure 9-589cI | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3455. |
| 3474 | 9.4.2.218.3 | 82.44 | Table 9-262aa, grammar issue | Change "of" to "on" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3474. |
| 3488 | 9.4.2.218.3 | 82.11 | Add clarity and call out bit position in Table 9-262aa for subfield "Dual Band Support" corresponding to those bit positions in Figure 9-589cI | Add bit B0 in Definition column Change to: "B0 indicates support of both...." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3486. |
| 3490 | 9.4.2.218.3 | 84.26 | Add clarity and call out bit position in Table 9-262aa for subfield "UL HE MU PPDU Payload Support" corresponding to those bit positions in Figure 9-589cI | Add bit B30 in Definition column Change to: "B30 indicates that the STA supports the reception of......." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3490. |
| 3492 | 9.4.2.218.3 | 84.31 | Add clarity and call out bit position in Table 9-262aa for subfield "SU Beamformer" corresponding to those bit positions in Figure 9-589cI | Add bit B31 in Definition column Change to: "B31 indicates support for operation as an SU beamformer." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3492. |
| 3494 | 9.4.2.218.3 | 84.36 | Add clarity and call out bit position in Table 9-262aa for subfield "SU Beamformee" corresponding to those bit positions in Figure 9-589cI | Add bit B32 in Definition column Change to: "B32 indicates support for operation as an SU beamformee." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3494. |
| 3496 | 9.4.2.218.3 | 84.40 | Add clarity and call out bit position in Table 9-262aa for subfield "MU Beamformer" corresponding to those bit positions in Figure 9-589cI | Add bit B33 in Definition column Change to: "B33 indicates support for operation as an MU beamformer." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3496. |
| 3511 | 9.4.2.218.3 | 85.26 | Add clarity and call out bit positions in Table 9-262aa for subfield "Number Of Sounding Dimensions For > 80 MHz" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bits B48-B51 in Definition column Change to: "B49-B51 represents the beamformer's capability.....for an HE NDP." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3511. |
| 3522 | 9.4.2.218.3 | 85.31 | Add clarity and call out bit positions in Table 9-262aa for subfield "Ng = 16 For SU Feedback Support" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bit B52 in Definition column Change to: "B52 indicates if the HE beamformee....." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3522. |
| 3524 | 9.4.2.218.3 | 85.35 | Add clarity and call out bit positions in Table 9-262aa for subfield "Ng = 16 For MU Feedback Support" corresponding to those bit positions in Figure 9-589cI. Missing period at the end of sentence. | Add bit B53 in Definition column Change to: "B53 indicates if the HE beamformee....." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3524. |
| 3528 | 9.4.2.218.3 | 85.39 | Add clarity and call out bit positions in Table 9-262aa for subfield "Codebook Size (ñ≥, ñΩ) = {4, 2} For SU Support" corresponding to those bit positions in Figure 9-589cI. | Add bit B54 in Definition column Change to: "B54 indicates if the HE beamformee....." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3528. |
| 3530 | 9.4.2.218.3 | 85.44 | Add clarity and call out bit positions in Table 9-262aa for subfield "Codebook Size (ñ≥, ñΩ) = {7,5} For MU Support" corresponding to those bit positions in Figure 9-589cI. | Add bit B55 in Definition column Change to: "B55 indicates if the HE beamformee....." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3530. |
| 3534 | 9.4.2.218.3 | 86.06 | Add clarity and call out bit position in Table 9-262aa for subfield "HE ER SU Payload" corresponding to those bit positions in Figure 9-589cI. | Add bit B59 in Definition column Change to: "B59: indicates the support of transmission......." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3534. |
| 3536 | 9.4.2.218.3 | 86.11 | Add clarity and call out bit position in Table 9-262aa for subfield "DL MU-MIMO on Partial BW" corresponding to those bit positions in Figure 9-589cI. | Add bit B60 in Definition column Change to: "B60: indicates the non-AP STA supports......." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3536. |
| 3538 | 9.4.2.218.3 | 86.14 | Add clarity and call out a "Note" reference in Table 9-262aa for subfield "DL MU-MIMO on Partial BW" in the Encoding column. | Add change to read: "Note: This field is reserved for an AP." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3538. |
| 3540 | 9.4.2.218.3 | 86.16 | Add clarity and call out bit position in Table 9-262aa for subfield "PPE Threshold Present" corresponding to those bit position in Figure 9-589cI. | Add bit B61 in Definition column Change to: "B61: indicates whether or no the PPE......." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3540. |
| 3542 | 9.4.2.218.3 | 86.18 | Add clarity and call out bit position in Table 9-262aa for subfield "SRP-based SR Support" corresponding to those bit position in Figure 9-589cI. | Add bit B62 in Definition column Change to: "B62: indicates that the STA supports SRP-based........." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3542. |
| 3546 | 9.4.2.218.3 | 86.21 | Add clarity and call out bit position in Table 9-262aa for subfield "Power Boost Factor +ªr Support" corresponding to those bit position in Figure 9-589cI. | Add bit B63 in Definition column Change to: "B63: indicates that the STA supports........." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3546. |
| 3550 | 9.4.2.218.3 | 86.24 | Add clarity and call out bit position in Table 9-262aa for subfield "4x HE-LTF And 0.8 us GI Support For HE PPDUs" corresponding to those bit position in Figure 9-589cI. | Add bit B64 in Definition column Change to: "B64: indicates for the reception of 4x LTF......." | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3550. |
| 3552 | 9.4.2.218.3 | 86.28 | Missing "Reserve" Subfield, and text for Definition and Encoding in Table 9-262aa. The Reserve subfield should correspond to the 7 bit positions B65 -B71 in Figure 9-589CI. | At the end of Table 9-262-aa. Add "Reserved" in Subfield column. Add text (see underlined text) "B65 - B71 (7-bits) are reserved." Encoding column leave blank. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3552. |
| 5139 | 9.4.2.218.3 | 82.26 | Regarding B5, if an AP establishes a 40 MHz BSS, and the non-AP STA sets B5 0, then the AP can never assign an RU to the non-AP STA? Or in other words, the non-AP STA will never participate in OFDMA? If this is the case, it is a bad idea and will greatly reduce efficiency. We should at least make the 20 MHz non-AP STAs participate in OFDMA in the primary channel. | As in comment | Reject—  The 802.11ax D1.0 provides flexibility to 20 MHz only non-AP STAs in terms of RU size support. Not all use cases require OFDMA support and hence this flexibility especially for 20 MHz only non-AP STAs is important. |
| 5140 | 9.4.2.218.3 | 82.30 | Regarding B6, if an AP establishes a 40 MHz or 80 MHz BSS, and the non-AP STA sets B6 0, then the AP can never assign an RU to the non-AP STA? Or in other words, the non-AP STA will never participate in OFDMA? If this is the case, it is a bad idea and will greatly reduce efficiency. We should at least make the 20 MHz non-AP STAs participate in OFDMA in the primary channel. | As in comment | Reject—  The 802.11ax D1.0 provides flexibility to 20 MHz only non-AP STAs in terms of RU size support. Not all use cases require OFDMA support and hence this flexibility especially for 20 MHz only non-AP STAs is important. |
| 5142 | 9.4.2.218.3 | 83.46 | Regarding the field "UL MU", this field is much more specific as to whether the STA supports UL MU-MIMO | Change name of the field to "UL MU-MIMO" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 5142. |
| 5143 | 9.4.2.218.3 | 84.26 | Regarding the field UL HE MU PPDU Payload Support", please clarify. It is reserved for non-AP STA, so does that mean that non-AP STAs are disallowed to support or mandatory to support? Does this really indicate behavior for all STA type, or is it really for just for HE AP? I can't find the use of the field anywhere in the draft. Why is the capability element needed? In fact, there doesn't even appear to be a definition for UL HE MU PPDU, so add one. | As in comment | Revised—  This field represents capability of an AP to support reception of full and partial BW HE MU PPDU transmission from a non-AP STA. It is reserved for non-AP, which implies that on reception the AP don’t care about this field.  This capability allows a non-AP STA to use HE MU PPDU format for transmission to the AP. There is mention of behavior associated with this field in Table 28-22 (Fields of the HE-SIG-B user field for an non-MU-MIMO allocation)  The description of this field is edited for clarity.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 5143. |
| 5144 | 9.4.2.218.3 | 84.30 | Regarding "SU Beamformer", what does "Set to 1 if sent by an HE AP with support for 4 or more spatial streams." mean? Does is mean that a AP STA always sets it to 1 if it supports 4+ SS and that being an SU beamformer is then mandatory? Please clarify. | as in comment | Reject—  Support of DL MU-MIMO transmission is mandatory for an AP with support for 4 or more spatial streams.  DL MU-MIMO transmission requires MU beamformer function at the AP.  The SU Beamformer function is implied if MU Beamformer is present. |
| 5145 | 9.4.2.218.3 | 84.36 | Regarding "SU Beamformee", what does "Set to 1 if sent by a non-AP STA." mean? Does is mean that a non-AP STA always sets it to 1 and that being an SU beamformee is mandatory? Please clarify. |  | Reject—  Support of DL MU-MIMO reception is mandatory for a non-AP STA. DL MU-MIMO reception requires MU beamformee function at the non-AP STA.  The SU Beamformee function is implied if MU Beamformee function is present. |
| 5146 | 9.4.2.218.3 | 84.40 | Regarding "MU Beamformer", what does "Set to 1 if sent by an AP." mean? Does is mean that an AP always sets it to 1 and that being an MU beamformee is mandatory? Please clarify.  what does "Set to 0 if sent by a non-AP STA." mean? Does is mean that a non-AP STA always sets it to 0 and that being an MU beamformer is prohibited? Please clarify.  if the above is true, then why do we need this capability bit? AP is mandatory, non-AP is disallowed - don't need a capability bit for this, just a shall statement somewhere. | As in comment | Revised—  “Set to 1 if sent by an AP” is the cause of confusion.  A non-AP STA never acts as a MU Beamformer and hence this field is always set to 0 when sent by a non-AP STA.  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 3552. |
| 7684 | 9.4.2.218.3 | 84.56 | Beamformee STS for <= 80' and 'NSTS total for <= 80 MHz' capabilities should be combined into one capability. They mean the same thing since Nsts,total = beamformee STS value | Delete 'Nsts Total for <= 80 MHz' | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7684. |
| 7685 | 9.4.2.218.3 | 84.56 | Beamformee STS for > 80' and 'NSTS total for > 80 MHz' capabilities should be combined into one capability. They mean the same thing since Nsts,total = beamformee STS value | Delete 'Nsts Total for > 80 MHz' | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7685. |
| 7768 | 9.4.2.218.3 | 84.50 | Can refers to normative permission, not appropriate here | Change "can receive" to "is capable of receiving", in both the Definition and Encoding cells. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7768. |
| 8569 | 9.4.2.218.3 | 84.56 | In Table 9-262aa, capability bit for NSTS Total <= 80 MHz. Description is confusing. | Propose the following rewording: "The maximum value for Nsts.total that can be sent in a DL MU MIMO transmission on full or partial bandwidth that includes that STA" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8569. |
| 8570 | 9.4.2.218.3 | 85.13 | In Table 9-262aa, capability bit for NSTS Total > 80 MHz. Description is confusing. | Propose the following rewording: "The maximum value for Nsts.total that can be sent in a DL MU MIMO transmission on full or partial bandwidth that includes that STA" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8570. |
| 8673 | 9.4.2.218.3 | 81.32 | Why is "NSTS Total For <= 80 MHz" 2 bits and "NSTS Total For > 80 MHz" 3 bits? Their definition and encoding are identical in Table 9-262aa. | Change "2" to "3", since 3 bits are already allocated (B37-B39) | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8673. |
| 7769 | 9.4.2.218.3 | 84.56 | Can refers to normative permission, not appropriate here | Chane "can be sent to the STA" to "the STA is capable of receiving" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8569. |
| 7770 | 9.4.2.218.3 | 8.458 | Can refers to normative permission, not appropriate here | Change "can receive" to "is capable of receiving" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7770. |
| 7771 | 9.4.2.218.3 | 85.06 | Can refers to normative permission, not appropriate here | Change "can receive" to "is capable of receiving" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7771. |
| 7772 | 9.4.2.218.3 | 85.13 | Can refers to normative permission, not appropriate here | Change "can receive" to "is capable of receiving" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7772. |
| 7773 | 9.4.2.218.3 | 85.15 | Can refers to normative permission, not appropriate here | Change "can receive" to "is capable of receiving" | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 7772. |
| 6418 | 9.4.2.218.3 | 82.27 | Why "Reserved" rather than "reserved"? Is this a defined term? | Change "Reserved" to "reserved". | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 6418. |
| 6419 | 9.4.2.218.3 | 82.32 | Why "Reserved" rather than "reserved"? Is this a defined term? | Change "Reserved" to "reserved". | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 6419. |
| 6421 | 9.4.2.218.3 | 83.16 | Incorrect units: in the second column, the units "us" are used. | Change to "ms". | Reject—  The CP (Cyclic Prefix) value is in us and not ms. |
| 6422 | 9.4.2.218.3 | 83.19 | Incorrect units: in the second column, the units "us" are used. | Change to "ms". | Reject—  The CP (Cyclic Prefix) value is in us and not ms. |
| 6423 | 9.4.2.218.3 | 83.25 | Incorrect units: in the second column, the units "us" are used. | Change to "ms". | Reject—  The CP (Cyclic Prefix) value is in us and not ms. |
| 6424 | 9.4.2.218.3 | 83.28 | Incorrect units: in the second column, the units "us" are used. | Change to "ms". | Reject—  The CP (Cyclic Prefix) value is in us and not ms. |
| 9312 | 9.4.2.218.3 | 85.26 | From its name, Number Of Sounding Dimensions For > 80 MHz, this subfield should apply for more than 80 MHz channel width. | Add in the description for Number Of Sounding Dimensions For > 80 MHz subfield that it applies when the channel width is more than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9312. |
| 9311 | 9.4.2.218.3 | 85.20 | From its name, Number Of Sounding Dimensions For <= 80 MHz, this subfield should apply for up to 80 MHz channel width. | Add in the description for Number Of Sounding Dimensions For <= 80 MHz subfield that it applies when the channel width is equal to or less than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9311. |
| 9306 | 9.4.2.218.3 | 84.49 | From its name, Beamformee STS For <= 80 MHz, this subfield should apply for up to 80 MHz channel width. | Add in the description for Beamformee STS For <= 80 MHz subfield that it applies when the channel width is eual to or less than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9306. |
| 9307 | 9.4.2.218.3 | 84.56 | From its name, NSTS Total For <= 80 MHz, this subfield should apply for up to 80 MHz channel width. | Add in the description for NSTS Total For <= 80 MHz subfield that it applies when the channel width is eual to or less than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9307. |
| 9308 | 9.4.2.218.3 | 85.06 | From its name, Beamformee STS For > 80 MHz, this subfield should apply for more than 80 MHz channel width. | Add in the description for Beamformee STS For > 80 MHz subfield that it applies when the channel width is more than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9308. |
| 9309 | 9.4.2.218.3 | 85.13 | From its name, NSTS Total For > 80 MHz, this subfield should apply for more than 80 MHz channel width. | Add in the description for NSTS Total For > 80 MHz subfield that it applies when the channel width is more than 80 MHz. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 9309. |
| 9269 | 9.4.2.218.3 | 85.48 | B56 now indicates support of reception of SU-Type partial \*and\* full bandwidth feedback in the Tx Beamforming Feedback With Trigger Frame Capability subfield in Table 9-262aa. This means it is set to 1 only if both the partial and the full bandwidth feedback is supported. The indication for the partial and for the full bandwidth feedback should be divided. | Change the definition to read as follows: If the transmitting STA is an AP STA: Bxx: indicates support of reception of SU-Type full bandwidth feedback Bxx: indicates support of reception of SU-Type partial bandwidth feedback Bxx: indicates support of reception of MU-Type partial bandwidth feedback Bxx: indicates support of reception of CQI-Only partial and full bandwidth feedback If the transmitting STA is a non-AP STA: Bxx: indicates support of transmission of SU-Type full bandwidth feedback Bxx: indicates support of transmission of SU-Type partial bandwidth feedback Bxx: indicates support of transmission of MU-Type partial bandwidth feedback Bxx: indicates support of transmission of CQI-Only partial and full bandwidth feedback | Reject—  Transmission and reception of full bandwidth and partial bandwidth SU-Type feedback using Trigger frame is optional. Furthermore, full bandwidth feedback is a special case of partial bandwidth feedback. |
| 8677 | 9.4.2.218.3 | 86.06 | The name "HE ER SU Payload" is not very descriptive. Replace with a name that better covers the definition. | See comment | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8677. |
| 8675 | 9.4.2.218.3 | 84.40 | There are 6 conditions for setting the MU Beamformer bit. Some of them are potentially contradictory. E.g: Set to 1 if SU Beamformer subfield is 1, Set to 0 if sent by non-AP STA. Also, two of the conditions are: Set to 0 if the SU Beamformer subfield is 0, Set to 1 if SU Beamformer subfield is set to 1. This would make the MU Beamformer bit identical to the SU Beamformer bit. Clearly some extra hierarchy or conditions are needed to specify the value of the MU Beamformer bit. | Correct Encoding of MU Beamformer bit. | Revised—  Proposed resolution accounts for the suggested change.  TGax Editor to make the changes shown in IEEE 802.11-17/0056r0 under all headings that include CID 8675. |

**TGax Editor: Please make the following changes to section 9.4.2.218.3 (CIDs: 3032, 3033, 3267, 3270, 3272, 3274, 3276, 3277, 3281, 3282, 3285, 3455, 3474, 3488, 3490, 3492, 3494, 3496, 3511, 3522, 3524, 3528, 3530, 3534, 3536, 3538, 3540, 3542, 3546, 3550, 3552, 5139, 5140, 5142, 5143, 5144, 5145, 5146, 7684, 7685, 7768, 7769, 7770, 7771, 7772, 7773, 8569, 8570, 8673,6418, 6419,6421,6422,6423, 6424, 9311, 9312, 9269, 8677, 8675)**

### 9.4.2.218.3 HE PHY Capabilities

The format of the HE PHY Information field is defined in Figure 9-589cl (HE PHY Capabilities Information field format).

~~B0 B1 B7 B8 B11 B12 B13 B14 B15 B16 B17 B18 B19 B20 B21~~

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ~~Dual Band Support~~ | ~~Channel Width Set~~ | ~~Preamble Puncturing Rx~~ | ~~Device Class~~ | ~~LDPC Coding in Payload~~ | ~~HE-LTF and GI For HE PPDUs~~ | ~~HE-LTF and GI For NDP~~ | ~~STBC Tx & Rx~~ | ~~Doppler~~ |

~~Bits: 1 7 4 1 1 2 2 2 2~~

~~B22 B23 B24 B26 B27 B29 B30 B31 B32 B33 B34 B36~~

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ~~UL MU~~ | ~~DCM Encoding Tx~~ | ~~DCM Encoding Rx~~ | ~~UL HE MU PPDU Payload Support~~ | ~~SU Beamformer~~ | ~~SU Beamformee~~ | ~~MU Beamformer~~ | ~~Beamformee STS For 80 MHz~~ |

~~Bits: 2 3 3 1 1 1 1 3~~

~~B37 B39 B40 B42 B43 B45 B46 B48 B49 B51 B52 B53~~

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ~~NSTS Total For MHz~~ | ~~Beamformee STS For 80 MHz~~ | ~~NSTS Total For MHz~~ | ~~Number of Sounding Dimensions For MHz~~ | ~~Number of Sounding Dimensions For MHz~~ | ~~Ng = 16 For SU Feedback Support~~ | ~~Ng = 16 For MU Feedback Support~~ |

~~Bits: 2 3 3 1 1 1 1~~

~~B54 B55 B56 B58 B59 B60 B61 B62~~

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ~~Codebook Size For SU Support~~ | ~~Codebook Size For MU Support~~ | ~~Beamforming Feedback With Trigger Frame~~ | ~~HE ER SU PPDU Payload~~ | ~~DL MU-MIMO On Partial Bandwidth~~ | ~~PPE Threshold Present~~ | ~~SRP-Based SR Support~~ |

~~Bits: 1 1 3 1 1 1 1~~

~~B63 B64 B65 B71~~

|  |  |  |
| --- | --- | --- |
| ~~Power Boost Factor Support~~ | ~~4x HE-LTF And 0.8 s GI For HE SU PPDUs~~ | ~~Reserved~~ |

~~Bits: 1 1 7~~

B0 B1 B7 B8 B11 B12 B13 B14 B15 B16 B17 B18 B19 B20 B21

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dual Band Support | Channel Width Set | Preamble Puncturing Rx | Device Class | LDPC Coding In Payload | HE-LTF and GI For HE PPDUs | HE-LTF and GI For NDP | STBC Tx & Rx | Doppler |

Bits: 1 7 4 1 1 2 2 2 2

B22 B23 B24 B26 B27 B29 B30 B31 B32 B33 B34 B36 B37 B39

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| UL MU-MIMO | DCM Encoding Tx | DCM Encoding Rx | UL HE MU PPDU Payload Support | SU Beamformer | SU Beamformee | MU Beamformer | Beamformee STS For 80 MHz | Beamformee STS For > 80 MHz |

Bits: 2 3 3 1 1 1 1 3 3

B40 B42 B43 B45 B46 B47 B48 B49 B50 B52 B53 B54

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Sounding Dimensions For MHz | Number of Sounding Dimensions For MHz | Ng = 16 For SU Feedback Support | Ng = 16 For MU Feedback Support | Codebook Size For SU Support | Codebook Size For MU Support | Beamforming Feedback With Trigger Frame | Extended Range Support on Partial BW | DL MU-MIMO On Partial Bandwidth |

Bits: 3 3 1 1 1 1 3 1 1

B55 B56 B57 B58 B59 B71

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PPE Threshold Present | SRP-Based SR Support | Power Boost Factor Support | 4x HE-LTF And 0.8 s GI For HE SU PPDUs | Reserved |

Bits: 1 1 1 1 13

Figure 9-589cl—HE PHY Capabilities Information field format

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

Table 9-262aa—Subfields of the HE PHY Capabilities Information field

|  |  |  |
| --- | --- | --- |
| Subfield | Definition | Encoding |
| Dual Band Support | B0: Indicates support of both 2.4 GHz and 5 GHz frequency bands. | B0 s~~S~~et to 0 if not supported.  B0 s~~S~~et to 1 if supported. |
| Channel Width Set | B1: Indicates STA support 40 MHz channel width in 2.4 GHz.  B2: Indicates STA support 40 MHz and 80 MHz channel width in 5 GHz.  B3: Indicates STA supports 160 MHz channel width in 5 GHz.  B4: Indicates STA supports 160/80+80 MHz channel width in 5 GHz.  B5: If B1 is set to 0, then B5 indicates support of 242/106/52/26-tone RU mapping in 40 MHz channel width in 2.4 GHz. Otherwise ~~R~~reserved.  B6: If B2, B3, and B4 are set to 0, then B6 indicates support of 242-tone RU mapping in 40 MHz and 80 MHz channel width in 5 GHz. Otherwise ~~R~~reserved.  B7: Reserved. | B1 set to 0 if not supported. B1 set to 1 if supported.  B2 set to 0 if not supported, i.e., it indicates 20 MHz only device in 5 GHz. B2 set to 1 if supported. ~~Note~~NOTE: AP always sets B2 to 1.  B3 set to 0 if not supported. B3 set to 1 if supported. If B3 set to 1 then B2 is set to 1.  B4 set to 0 if not supported. B4 set to 1 if supported. If B4 set to 1 then B3 is set to 1.  B5 set to 0 if not supported. B5 set to 1 if supported.  B6 set to 0 if not supported. B6 set to 1 if supported.  NOTE: B1 and B5 are only applicable to 2.4 GHz band and ignored at the receiver when HE PHY capabilities advertised on 5 GHz band.  B2, B3, B4, and B6 are only applicable to 5 GHz band and ignored at the receiver when HE PHY capabilities advertised ~~of~~ on 2.4 GHz band. |
| Preamble Puncturing Rx | B8: Indicates STA supports reception of preamble puncturing in 80 MHz, where in the preamble only the secondary 20 MHz is punctured.  B9: Indicates STA supports reception of preamble puncturing in 80 MHz, where in the preamble only one of the two 20 MHz sub-channels in the secondary 40 MHz is punctured.  B10: Indicates STA supports reception of preamble puncturing in 160 MHz or 80+80 MHz, where in the primary 80 MHz of the preamble only the secondary 20 MHz is punctured.  B11: Indicates STA supports reception of preamble puncturing in 160 MHz or 80+80 MHz, where in the primary 80 MHz of the preamble, the primary 40 MHz is present. | B8 set to 0 if not supported. B8 set to 1 if supported.  B9 set to 0 if not supported. B9 set to 1 if supported.  B10 set to 0 if not supported. B10 set to 1 if supported.  B11 set to 0 if not supported. B11 set to 1 if supported. |
| Device Class | B12: Indicates transmitting STA is a Class A or a Class B device. | B12 s~~S~~et to 1 to indicate STA is a Class A device.  B12 s~~S~~et to 0 to indicate STA is a Class B device.  ~~Note~~NOTE: This field is reserved when transmitting STA is an AP STA. |
| LDPC Coding In Payload | B13: Indicates support of transmission and reception of LDPC encoded packets. | B13 s~~S~~et to 1 if supported by the STA. B13 s~~S~~et to 0 otherwise. |
| HE-LTF And GI For HE PPDUs | B14: Indicates support of reception of 1x LTF and 0.8 us guard interval duration for HE SU PPDUs.  B15: Indicates support of reception of 1x LTF and 1.6 us guard interval duration for HE Trigger-based PPDUs. | B14 s~~S~~et to 1 if supported by the  STA. B14 s~~S~~et to 0 otherwise.  B15 set to 1 if supported by the  STA. B15 set to 0 otherwise. |
| HE-LTF And GI For NDP | B16: For a transmitting STA acting as beamformer, it indicates support of NDP transmission using 4x LTF and 3.2 us guard interval duration.  B17: For a transmitting STA acting as beamformee, it indicates support of NDP reception using 4x LTF and 3.2 us guard interval duration. | If the SU Beamformer Capable field is set to 1 then B16 set to 1 if supported by the STA. Set B16 to 0 otherwise.  If SU Beamformer Capable field is set to 0 then B16 is reserved.  If the SU Beamformee Capable field is set to 1 then B17 set to 1 if supported by the STA. Set B17 to 0 otherwise.  If SU Beamformee Capable field is set to 0 then B17 is reserved. |
| STBC Tx And Rx | B18: I~~i~~ndicates support for the transmission of HE PPDUs using STBC with one spatial stream.  B19: I~~i~~ndicates support for the reception of HE PPDUs using STBC with one spatial stream. | B18 set to 1 if supported by the STA. B18 s~~S~~et to 0 otherwise.  B19 set to 1 if supported by the STA. B19 s~~S~~et to 0 otherwise. |
| Doppler | B20: I~~i~~ndicates transmitting STA supports transmitting HE PPDUs with Doppler procedure.  B21: I~~i~~ndicates transmitting STA supports receiving HE PPDUs with Doppler procedure. | B20 set to 1 if supported by the STA. B20 s~~S~~et to 0 otherwise.  B21 set to 1 if supported by the STA. B21 s~~S~~et to 0 otherwise. |
| Uplink MU-MIMO | If the transmitting STA is an AP:  B22: I~~i~~ndicates STA supports ~~of reception of full bandwidth UL~~ MU-MIMO ~~transmission~~ reception on an RU in an HE trigger-based PPDU where the RU spans the entire PPDU bandwidth (UL MU-MIMO).  B23: I~~i~~ndicates STA supports ~~of reception of UL~~ MU-MIMO ~~transmission~~ reception on an RU in an ~~HE MU PPDU~~ HE trigger-based PPDU where the RU does not span the entire PPDU bandwidth (UL MU-MIMO with OFDMA).  If the transmitting STA is a non-AP STA:  B22: I~~i~~ndicates STA supports ~~of transmission of~~ ~~full bandwidth~~ ~~UL~~ MU-MIMO transmission on an RU in an HE trigger-based PPDU where the RU spans the entire PPDU bandwidth (UL MU-MIMO).    B23: I~~i~~ndicates STA supports ~~of transmission of UL~~ MU-MIMO transmission on an RU in an ~~HE MU PPDU~~HE trigger-based PPDU where the RU does not span the entire PPDU bandwidth (UL MU-MIMO with OFDMA). | B22 set to 1 if supported by the STA. B22 s~~S~~et to 0 otherwise.  B23 set to 1 if supported by the STA. B23 s~~S~~et to 0 otherwise.  ~~NOTE:~~~~If the non-AP STA sets B23 (Uplink MU-MIMO on Partial Bandwidth) to 0, it shall support transmitting SU RU within an HE MU PPDU where some other RU is employing DL MU-MIMO~~ |
| DCM Encoding At Tx And Rx | B24 – B26: Signals support of Tx of (i) packet payload with dual sub-carrier modulation at a STA and (ii) DCM encoded HE-SIG-B in an HE MU PPDU at a STA. The ignalling includes maximum constellation and the maximum number of spatial streams that are supported with DCM.  B27 – B29: Signals support of reception of (i) packet payload with dual sub-carrier modulation at a STA and (ii) DCM encoded HE-SIG-B in an HE MU PPDU at a STA. The ignalling includes maximum constellation and the maximum number of spatial streams that are supported with DCM. | B25:B24 signals Maximum Constellation.  00: Does not support DCM, 01: BPSK , 10: QPSK, 11: 16-QAM.  B26 signals maximum number of spatial streams with DCM.  0: 1 spatial stream, 1: 2 spatial streams.  B28:B27 signals Maximum Constellation.  00: Does not support DCM, 01: BPSK , 10: QPSK, 11: 16-QAM.  B29 signals maximum number of spatial streams with DCM.  0: 1 spatial stream, 1: 2 spatial streams. |
| UL HE MU PPDU Payload Support | B30: Indicates that the STA supports reception on an RU in an HE MU PPDU where   1. the RU spans the entire PPDU bandwidth or 2. the RU does not span the entire PPDU bandwidth (106-tone RU within 20 MHz bandwidth).   ~~Indicates that the STA supports the reception of an HE MU PPDU payload over full bandwidth and partial bandwidth (106-tone RU within 20 MHz).~~ | B30 s~~S~~et to 0 if not supported by the STA. B30 s~~S~~et to 1 if supported by the STA.  This field is reserved ~~for a~~ when the transmitting STA is a non-AP STA. |
| SU Beamformer Capable | B31: Indicates support for operation as an SU beamformer. | B31 s~~S~~et to 0 if not supported.  B31 s~~S~~et to 1 if supported.  B31 s~~S~~et to 1 if sent by an HE AP with support of 4 or more spatial streams |
| SU Beamformee Capable | B32: Indicates support for operation as an SU ~~b~~Beamformee. | B32 s~~S~~et to 0 if not supported.  B32 s~~S~~et to 1 if supported.  B32 s~~S~~et to 1 if sent by a non-AP STA. |
| MU Beamformer Capable | B33: Indicates support for operation as an MU Beamformer. | B33 set to 0 if SU Beamformer subfield is set to 0.  B33 set to 0 if not supported by the AP.  B33 set to 1 if supported by the AP.  B33 is set to 0 if sent by a non-AP STA.  ~~Set to 0 if not supported.~~  ~~Set to 0 if SU Beamformer subfield is set to 0.~~  ~~Set to 0 if sent by a non-AP STA.~~  ~~Set to 1 if supported.~~  ~~Set to 1 if SU Beamformer subfield is set to 1.~~  ~~Set to 1 if sent by an AP.~~ |
| Beamformee STS For BW | B34-B36: For bandwidth less than or equal to 80 MHz, it indicates the maximum number of space-time streams that the STA can receive in an HE NDP, the maximum value for that can be sent in a DL MU MIMO transmission on an RU where the RU may or may not span the entire PPDU bandwidth, that includes that STA. | If SU beamformee capable, B34-B36 set to maximum number of space-time streams that the STA is capable of receiving ~~can receive~~ in an HE NDP minus 1. The minimum value of this field is 3. Otherwise, reserved. |
| ~~Nsts\_Total support for BW~~ | ~~The maximum value for that can be sent to the STA in an DL MU-MIMO transmission on full or partial bandwidth~~ | ~~If SU beamformee capable, set to maximum number of total space-time streams that the STA can receive minus 1. The minimum value of this field is 3. Otherwise reserved.~~ |
| Beamformee STS For BW | B37-B39: For bandwidths greater than 80 MHz, it indicates the maximum number of space-time streams that the STA can receive in an HE NDP, the maximum value for that can be sent in a DL MU MIMO transmission on an RU where the RU may or may not span the entire PPDU bandwidth, that includes that STA. | If SU beamformee capable, B37-B39 set to maximum number of space-time streams that the STA is capable of receiving ~~can receive~~ in an HE NDP minus 1. The minimum value of this field is 3. Otherwise, reserved. |
| ~~Nsts\_Total support for BW~~ | ~~The maximum value for that can be sent to the STA in an DL MU-MIMO transmission on full or partial bandwidth~~ | ~~If SU beamformee capable, set to maximum number of total space-time streams that the STA can receive minus 1. The minimum value of this field is 3. Otherwise reserved.~~ |
| Number Of Sounding Dimensions For BW | B40-B42: For bandwidth less than or equal to 80 MHz, it indicates the Beamformer’s capability indicating the maximum value of the TXVECTOR parameter NUM\_STS for an HE NDP. | If SU beamformer capable, B40-B42 set to the maximum supported value of the TXVECTOR parameter NUM\_STS minus 1. Otherwise, reserved. |
| Number Of Sounding Dimensions For BW | B43-B45: For bandwidth greater than 80 MHz, it indicates the Beamformer’s capability indicating the maximum value of the TXVECTOR parameter NUM\_STS for an HE NDP. | If SU beamformer capable, B43-B45 set to the maximum supported value of the TXVECTOR parameter NUM\_STS minus 1. Otherwise, reserved. |
| Ng = 16 For SU-Type Feedback Support | B46: Indicates if HE Beamformee is capable of feedback with tone grouping of 16 in the HE Compressed Beamforming Report field for a SU-type feedback. | B46 s~~S~~et to 1 if supported by the STA. B46 s~~S~~et to 0 otherwise. |
| Ng = 16 For MU-Type Feedback Support | B47: Indicates if HE Beamformee is capable of feedback with tone grouping of 16 in the HE Compressed Beamforming Report field for a MU-type feedback | B47 s~~S~~et to 1 if supported by the STA. B47 s~~S~~et to 0 otherwise. |
| Codebook size For SU Support | B48: Indicates if HE Beamformee is capable of feedback with codebook size in the HE Compressed Beamforming Report field for a SU-type feedback. | B48 s~~S~~et to 1 if supported by the STA. B48 s~~S~~et to 0 otherwise. |
| Codebook size For MU Support | B49: Indicates if HE Beamformee is capable of feedback with codebook size in the HE Compressed Beamforming Report field for a MU-type feedback. | B49 s~~S~~et to 1 if supported by the STA. B49 s~~S~~et to 0 otherwise. |
| Tx Beamforming Feedback with Trigger frame | If the transmitting STA is an AP STA:  ~~B56~~B50: indicates support of reception of SU-Type partial and full bandwidth feedback.  ~~B57~~B51: indicates support of reception of MU-Type partial bandwidth feedback.  ~~B58~~B52 indicates support of reception of CQI-Only partial and full bandwidth feedback.  If the transmitting STA is a non-AP STA:  ~~B56~~B50: indicates support of transmission of SU-Type partial and full bandwidth feedback.  ~~B57~~B51: indicates support of transmission of MU-Type partial bandwidth feedback.  ~~B58~~B52: indicates support of transmission of CQI-Only partial and full bandwidth feedback. | B50 s~~S~~et ~~B56~~ to 1 if SU-Type partial and full bandwidth feedback supported by the STA. B50 s~~S~~et to 0 otherwise.  B51 s~~S~~et ~~B57~~ to 1 if MU-Type partial bandwidth feedback supported by the STA. B51 s~~S~~et to 0 otherwise.  Set ~~B58~~B52 to 1 if CQI-Only partial and full bandwidth feedback supported by the STA. B52 s~~S~~et to 0 otherwise. |
| ~~HE ER SU Payload~~ExtendedRange Support on Partial BW | B53: Indicates the support of transmission and reception of HE EXT SU PPDU payload transmitted over the ~~right~~ higher frequency 106-tone RU within Primary 20 MHz. | B53 s~~S~~et to 1 if supported by the STA. Otherwise, B53 set to 0. |
| DL MU-MIMO on Partial BW | B54: I~~i~~ndicates non-AP STA supports reception of DL MU-MIMO transmission on an RU in an HE MU PPDU where the RU does not span the entire PPDU bandwidth (DL MU MIMO with OFDMA). | B54 s~~S~~et to 1 if supported by the non-AP STA. B54 s~~S~~et to 0 if not supported by non-AP STA.  This field is reserved for an AP.  NOTE:If the non-AP STA sets B54 (DL MU-MIMO on Partial Bandwidth) to 0, it shall support receiving SU RU within an HE MU PPDU where some other RU is employing DL MU-MIMO. |
| PPE Threshold Present | B55: ~~It~~ iIndicates if the PPE Threshold field is present or not. | B55 s~~S~~et to 1 if PPE Threshold field is present.  B55 s~~S~~et to 0, otherwise. |
| SRP-based SR Support | B56: ~~It i~~Indicates if the STA supports SRP-based SR operation. | B56 s~~S~~et to 1 if supported.  B56 s~~S~~et to 0 otherwise. |
| Power Boost Factor Support | B57: Indicates that the STA supports power factor for the r-th RU in the range [0.5, 2]. | B57 s~~S~~et to 1 if supported.  B57 s~~S~~et to 0 otherwise. |
| 4x HE-LTF and 0.8 us GI Support for HE PPDUs | B58: Indicates support for the reception of 4x HE-LTF and 0.8 us guard interval duration for HE SU PPDUs. | B58 s~~S~~et to 1 if supported.  B58 s~~S~~et to 0 otherwise. |

A STA that declares support for HE trigger-based PPDUs shall also declare whether they belong to class A or class B. Class A STAs are high capability devices and class B STAs are low capability devices.

**References:**

1. **IEEE P802.11axTM/D1.0, Nov 2016.**