IEEE P802.11
Wireless LANs

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| Changes to D3.0  |
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Abstract

This submission proposes resolutions for comments of TGax Draft 3.0 with the following CIDs:

CID 15436, 15457, 15458, 15459, 15460, 15470, 15577, 15579, 15582, 15583, 15584, 15585, 15586, 15587, 15854, 15860, 15921, 15945, 16042, 16055, 16177, 16476, 16477, 16478, 16479, 16480, 16481, 16482, 16483, 16708, 16710, 16793, 16863, 16864, 16865, 16866, 17003.

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: editorial
* Rev 2: updated resolution of CID 15577
* Rev 3: update resolution of CID 16793

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. | Clause | Comment | Proposed changes | Resolution |
| 15436 | Amelia Andersdotter | 406.58 | 28.2.6.2 | There is a problem with cross-references here: "As defined in 28.3.21 (HE receive procedure), once a PPDU is received and detected as a NON\_HT PPDU, the behavior of the HE PHY is defined in Clause 15" contains a few problems: In Clause 28.3.31, on page 576, lines 2-4, a "non-HT PPDU" is referred, but no "NON\_HT PPDU". Clause 28.3.21 lacks references to NON\_HT PPDUs, but assuming it's a spelling mistake on page 576, line 2, it is specified in 28.3.31 that Clause 17 and 18 should apply upon detection of NON\_HT PPDUs. There is no mention of clauses 15 or 16 in Clause 28.3.21, which might cause confusion if this paragraph references 28.3.21 as the more authoritative text on the situation briefly described here. | This is a cross-referencing problem. | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15436. |
| 15457 | Amelia Andersdotter | 406.17 | 28.2.6.2 | This paragraph begins with an incomplete conditional in the first clause. Then When-statement lacks a verb(!) The "when" should be an "if", and "a PHY-TXSTART.request(TXVECTOR) primitive with the FORMAT parameter equal to NON\_HT" could be changed into "a PHY-TXSTART.request(TXVECTOR) primitive is equipped with a FORMAT parameter equal to NON\_HT" for instance. The list of clauses that describes the consequence of the first part of the sentence being true is not closed. It reads as "Clause 15, Clause 16, Clause 17, Clause 18 depends on NON\_HT\_MODULATION." This should either be "Clause 15, Clause 16 and/or Clause 17. Further, Clause 18 may apply depending on the parameter NON\_HT\_MODULATION." | As in comment. | RevisedAgree with the 1st point but not the 2nd one. Clause 15/16/17/18 depends on NON\_HT\_MODULATION, which could be ERP-DSSS,ERP-CCK,ERP-OFDM, OFDM. This is aligned with the original text.-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15457. |
| 15458 | Amelia Andersdotter | 406.42 | 28.2.6.2 | This NOTE appears to contradict the first paragraph of this clause. | As in comment. | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15458. |
| 15459 | Amelia Andersdotter | 406.47 | 28.2.6.2 | Conditional. The rest of the paragraph has the problem that it first introduces that possibility that an HE PHY receives a PHY-CON-FIG.request(PHYCONFIG\_VECTOR) primitive, but then says that the HE PHY might behave as if it received a (different?) PHY-CON- FIG.request(PHYCONFIG\_VECTOR) primitive with some PHYCONFIG\_VECTOR elements removed. It's not immediately clear what the use is of this having the three parameters CHAN-NEL\_WIDTH, CENTER\_FREQUENCY\_SEGMENT\_0, and CENTER\_FREQUENCY\_SEGMENT\_1 in the PHYCONFIG\_VECTOR if they "shall" be discarded whenever a HE PHY receives them. | This paragraph might better written as "If an HE STA has received a a PHY-TXSTART.request(TXVECTOR) primitive with the FORMAT parameter equal to NON\_HT, then it shall discard the CHANNEL\_WIDTH, CENTER\_FREQUENCY\_SEGMENT\_0 and CENTER\_FREQUENCY\_SEGMENT\_1 parameters from any subsequent PHYCONFIG\_VECTOR, and behave as if it were a Clause 15 (DSSSPHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate directsequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency divisionmultiplexing (OFDM) PHY specification) or Clause 18 (Extended Rate PHY (ERP) specification) PHY." | Revised –The proposed change has a sequence that PHY\_TxSTART.request primarive comes before PHY-CONFIG.request primitive, which may not be true. Revised another way.-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15459. |
| 15460 | Amelia Andersdotter | 406.58 | 28.2.6.2 | There is a problem with cross-references here: "As defined in 28.3.21 (HE receive procedure), once a PPDU is received and detected as a NON\_HT PPDU, the behavior of the HE PHY is defined in Clause 15" contains a few problems: In Clause 28.3.31, on page 576, lines 2-4, a "non-HT PPDU" is referred, but no "NON\_HT PPDU". Clause 28.3.21 lacks references to NON\_HT PPDUs, but assuming "non-HT PPDU" is a spelling mistake on page 576, line 2, it is specified in 28.3.31 that Clause 17 and 18 should apply upon detection of NON\_HT PPDUs. There is no mention of clauses 15 or 16 in Clause 28.3.21, which might cause confusion if this paragraph references 28.3.21 as the more authoritative text on the situation briefly described here. | This is a cross-referencing problem. | Revised –Resolved in CID 15436 |
| 15470 | Amelia Andersdotter | 429.23 | 28.3.5 | The title of Figure 28-13 is missing some qualifier for the HE MU PPDU (i.e. the Beam Change Field is 1 and the HE MU PPDU.... Is what?). The Beam Change Field is "set to 1" and also the "when" should be an "if". Additionally the Beam Change field is in the HE-SIG-A field, and so is actually a "subfield". | As in comment. | Revised –-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15470. |
| 15577 | Bin Tian | 573.37 | 28.3.21 | Figure 28-61 needs to add the MAC sublayer issues a PHY-TRIGGER.request with a TRIGVECTOR parameter to provides the PHY entity with the information needed to receive TB PPDU | as in comment | Rejected-MAC send PHY trigvector is behaviour of transmitter side. We have text in Tx side describing this process which is clear. Adding to the receiver side is not quite necessary. |
| 15579 | Bin Tian | 577.16 | 28.3.21 | In the sentence of"A STA, who wants to predict the duration of the HE TB PPDU, shall maintain PHY-CCA.indication(BUSY, channellist) primitive for the predicted duration of the transmitted PPDU derived from the LENGTH field in L-SIG ..", it is not clear the behavior for a STA doesn't want to predict the duration of HE TB PPDU. Why needs speical text for HE TB PPDU? LENGTH should always be respected. Suggest removing the entire sentence | as in comment | Accepted |
| 15582 | Carlos Aldana | 576.44 | 28.3.21 | "MCS 0" should be "6 Mb/s in non-HT" | As in comment | Accepted |
| 15583 | Carlos Aldana | 576.41 | 28.3.21 | It is not clear how the RL-SIG should be detected. We should add the following statement "Detecting the RL-SIG comprises finding identical copies of L-SIG subject to noise power level found" before "If RL-SIG is detected,..." | As in comment | Rejected-Implementation related. |
| 15584 | Carlos Aldana | 576.49 | 28.3.21 | "MCS 0" should be "6 Mb/s in non-HT" | As in comment | Accepted |
| 15585 | Carlos Aldana | 576.50 | 28.3.21 | To improve detection of 802.11ax preamble, we should check for the L-SIG and RL-SIG tone values at [-28,-27,27,28]. | Change the following clause "If a valid parity bit and the RATE with MCS 0 are indicated in L-SIG and RL-SIG and the LENGTH fieldvalue in L-SIG and RL-SIG meets the condition that the remainder is 1 after LENGTH divided by 3," to "If a valid parity bit and the RATE with MCS 0 are indicated in L-SIG, RL-SIG and the LENGTH field value in L-SIG and RL-SIG meets the condition that the remainder is 1 after LENGTH divided by 3, and the subcarriers at [-28,-27,27,28] correspond to values of [-1, -1, -1, 1], ". | Rejected-Implementation issue. |
| 15586 | Carlos Aldana | 577.23 | 28.3.21 | To improve detection of 802.11ax preamble, we should check for the L-SIG and RL-SIG tone values at [-28,-27,27,28] as well as RATE being set to 6 Mbps in non-HT. | Change the following clause "If a valid parity bit of L-SIG and RL-SIG is indicated and the LENGTH field value in L-SIG and RL-SIGmeet the condition that the remainder is 2 after LENGTH divided by 3," to "If a valid parity bit and the RATE with 6 Mb/s in non-HT are indicated in L-SIG, RL-SIG and the LENGTH field value in L-SIG and RL-SIG meets the condition that the remainder is 2 after LENGTH divided by 3, and the subcarriers at [-28,-27,27,28] correspond to values of [-1, -1, -1, 1],". | Rejected-Implementation issue. |
| 15587 | Carlos Aldana | 577.54 | 28.3.21 | To improve detection of 802.11ax preamble, we should check for the L-SIG and RL-SIG tone values at [-28,-27,27,28] as well as RATE being set to 6 Mbps in non-HT. | Change the following clause "If a valid parity bit of L-SIG and RL-SIG is indicated and the LENGTH field value in L-SIG and RL-SIGmeet the condition that the remainder is 2 after LENGTH divided by 3," to "If a valid parity bit and the RATE with 6 Mb/s are indicated in L-SIG, RL-SIG and the LENGTH field value in L-SIG and RL-SIG meets the condition that the remainder is 2 after LENGTH divided by 3, and the subcarriers at [-28,-27,27,28] correspond to values of [-1, -1, -1, 1],". | Rejected-Implementation issue. |
| 15854 | Lei Huang | 58.32 | 8.3.4.4 | If the value of the parameter DOPPLER is 1, NUMBER\_OF\_HELTF\_SYMBOLS\_AND\_MIDAMBLE\_PREIODICITY field indicates the number of HE-LTF symbols and the periodicity of midamble present inthe expected HE TB PPDU. | change "Indicates the number of HE-LTF symbols.." to "Indicates the number of HE-LTF symbols and the periodicity of midamble ... | Accepted |
| 15860 | Liwen Chu | 57.63 | 8.3.4.4 | Changed to "...to the Trigger frame or TRS field." | As in the comment | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15860. |
| 15921 | Lochan Verma | 430.37 | 28.3.5 | Definition of DCM tone mapper is not provided. The functionality is described only. | as in comment | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 15921. |
| 15945 | Mark Hamilton | 60.50 | 8.3.5.2.2 | Why does PHY-DATA.request need an additional, new parameter to identify which receiving STA the octet is for, instead of using the USER\_INDEX parameter already there for VHT MU? The STA\_ID\_LIST provided in the TXVECTOR for HE should be indexable, just as it was for VHT. | Delete the addition of STA\_INDEX. Update the definition of USER\_INDEX to apply to HE MU PPDUs (in addition to VHT MU PPDUs), and to index into the STA\_ID\_LIST in the HE case. | RejectedSTA\_ID\_LIST defined clearly already. Why repurpose an old definition? |
| 16042 | Mark RISON | 570.52 | 28.3.20 | "When a packet extension and/or a signal extension present, the PHY-TXEND.confirmprimitive is generated at the end of the packet extension or signal extension." -- well, which? | Change the para at the referenced location to "A packet extension and/or a signal extension may be present in the PPDU. The PHY-TXEND.confirm primitive is generated at the latest of the actual ending time of the PPDU, the end of the packet extension if present, and the end of the signal extension if present." | Accepted  |
| 16055 | Mark RISON | 57.44 | 8.3.4.4 | Table 8-4 and Table 28-2 duplicate the TRIGVECTOR information | Do not make the insertions to Table 8-4 shown and instead at the end of the referenced subclause insert a para "The Clause 28 PHY TRIGVECTOR and contains parameters related to the operation of UL MU (see Table 28-2)." | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16055. |
| 16177 | Mark RISON | 570.52 | 28.3.20 | "When a packet extension and/or a signal extension present, the PHY-TXEND.confirmprimitive is generated at the end of the packet extension or signal extension." -- this is not an implementation choice. The primitive must be generated at the later of the two, if both are present | Change the para at the referenced location to "A packet extension and/or a signal extension may be present in the PPDU. The PHY-TXEND.confirm primitive is generated at the latest of the end of the last symbol of the PPDU, the packet extension if present and the signal extension if present." | Revised-No more change/modification required.Resolved in 16042. Duplicated Comment. |
| 16476 | Ming Gan | 567.28 | 28.3.20 | In P501L22 subclause 28.3.11.1, it says "If BCC encoding is used, the Data field shall consist of the SERVICE field, the PSDU, the pre-FEC PHY padding bits, the tail bits, and the post-FEC padding bits". However, in Figure 28-53, it shows "Pre-FEC Padding if needed" | Change "Pre-FEC Padding if needed" to "Pre-FEC PHY Padding if needed" | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16476. |
| 16477 | Ming Gan | 568.13 | 28.3.20 | In P501L22 subclause 28.3.11.1, it says "If BCC encoding is used, the Data field shall consist of the SERVICE field, the PSDU, the pre-FEC PHY padding bits, the tail bits, and the post-FEC padding bits". However, in Figure 28-54, it shows "Pre-FEC Padding if needed" | Change "Pre-FEC Padding if needed" to "Pre-FEC PHY Padding if needed" | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16477. |
| 16478 | Ming Gan | 568.43 | 28.3.20 | In P501L22 subclause 28.3.11.1, it says "If BCC encoding is used, the Data field shall consist of the SERVICE field, the PSDU, the pre-FEC PHY padding bits, the tail bits, and the post-FEC padding bits". However, in Figure 28-55, it shows "Pre-FEC Padding if needed" | Change "Pre-FEC Padding if needed" to "Pre-FEC PHY Padding if needed" | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16478. |
| 16479 | Ming Gan | 569.12 | 28.3.20 | In P501L22 subclause 28.3.11.1, it says "If BCC encoding is used, the Data field shall consist of the SERVICE field, the PSDU, the pre-FEC PHY padding bits, the tail bits, and the post-FEC padding bits". However, in Figure 28-56, it shows "Pre-FEC Padding if needed" | Change "Pre-FEC Padding if needed" to "Pre-FEC PHY Padding if needed" | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16479. |
| 16480 | Ming Gan | 567.28 | 28.3.20 | In Figure 28-53, it shows "Tail bits if needed". However, tail bits are always there. | Change it to "Tail bits" | Rejected-LDPC doesn’t have TB. |
| 16481 | Ming Gan | 568.13 | 28.3.20 | In Figure 28-54, it shows "Tail bits if needed". However, tail bits are always there. | Change it to "Tail bits" | Rejected-LDPC doesn’t have TB. |
| 16482 | Ming Gan | 558.43 | 28.3.20 | In Figure 28-55, it shows "Tail bits if needed". However, tail bits are always there. | Change it to "Tail bits" | Rejected-LDPC doesn’t have TB. |
| 16483 | Ming Gan | 569.12 | 28.3.20 | In Figure 28-56, it shows "Tail bits if needed". However, tail bits are always there. | Change it to "Tail bits" | Rejected-LDPC doesn’t have TB. |
| 16708 | ron porat | 433.38 | 28.3.5 | Figure for Transmitter Block Diagram for MU-MIMO with BCC missing | Addition of block diagram for MU-MIMO with BCC encoding. | Revised-TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16708. |
| 16710 | ron porat | 440.28 | 28.3.6.9 | Paragraph does not describe HE TB NDP PPDU | To subclause b, add a sentence describing there is no pilot mapping for HE TB NDP PPDU | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16710. |
| 16793 | Sigurd Schelstraete | 435.61 | 28.3.6.2 | CSD is mentioned twice in the construction of L-STF. Depending on whether Beam Change is used or not, it refers to either stream-based or chain-based CSD. It would be better to distinguish the names accordingly. | Change first and second occurrence of CSD to "stream CSD" and "chain CSD" respectively.Similar comment for other preamble fields. | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16793. |
| 16863 | stephane baron | 575.51 | 28.3.21 | The PHY Rx state machine contains an inconsistency between the description text (page 577, line 64-65) and the corresponding states and transitions in the state diagram. According to the description, the condition to determine if a PPDU is filtered out or not, is based on the determination of the BSS color value in the HE-SIG-A, and not on the content of the PHYCONFIG\_VECTOR. Please correct the state diagram. | Modifiy the condition "Evaluate whether the PPDU is filtered out or not based on PHYCONFIG\_VECTOR" by "Evaluate wether the PPDU is filtered out or not based on the BSS Color value in HE-SIG-A" | Revised--TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16863. |
| 16864 | stephane baron | 575.60 | 28.3.21 | The PHY Rx state machine contains an inconsistency between the description text (page 578, line 1-9) and the corresponding states and transitions in the state diagram. According to the description, the latest condition to determine if a PPDU is filtered out or not, is based on the determination of the presence of an intended STA\_ID in the HE-SIG-B, and not on the content of the PHYCONFIG\_VECTOR (BSS color). Please correct the state diagram. | Modifiy the condition "Evaluate whether the PPDU is filtered out or not based on PHYCONFIG\_VECTOR" by "Evaluate wether the PPDU is filtered out or not based on the presence of an intended STA-ID in HE-SIG-B" | Revised --TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16864. |
| 16865 | stephane baron | 575.57 | 28.3.21 | Reason for filtering out a PPDU after HE-SIG-B reception is incorrect in the PHY Rx state machine. | Replace the filtering reason "Filtered out (No Match BSS color)" by "Filtered out (No intended STA\_ID) | Revised --TGax editor to make the changes shown in 11-18/1493r3 under all headings that include CID 16865. |
| 16866 | stephane baron | 578.05 | 28.3.21 | intended STA-ID is quite fuzzy. Intended STA-ID can be 2045 if the station is non associated, and for associated stations, the intended STA-ID can be 0 or 2047 (for broadcast) or the AID of the station. Please clarify the definition of intended STA-ID : Identifier of the STA or the broadcastidentifier(s) intended for the STA. | As in comment | Rejected-STA-ID can be individual ID or broadcast ID. Receiver need to parse the data if either one is detected. |
| 17003 | Yasuhiko Inoue | 58.58 | 8.3.4.4 | Table 8-4, Value of GI\_HELTF TYPE:"Indicates the GI and HE-LTF type of the expected HE TB PPDUs.Enumerated type:1x LTF + 1.6 ╬╝s GI2x LTF + 1.6 ╬╝s GI4x LTF + 3.2 ╬╝s GI"I am not sure if this is the actual coding of this parameter value. | Instead of enumerated type, other way (e.g., something like following description) seems to be good.Set to 0 for 1x LTF + 1.6 ╬╝s GI.Set to 1 for 2x LTF + 1.6 ╬╝s GI.Set to 2 for 4x LTF + 3.2 ╬╝s GI. | Accepted |

**Propose:** Revised the following CIDs per editing instructions in 11-18/1493r3.

*To the TGax Editor: modify P.L. 406.58 as following (CID 15436).*

As defined in 28.3.21 (HE receive procedure), once a PPDU is received and detected as a ~~NON\_HT~~ Non-HT PPDU,

*In addition,* *modify P.L. 576.2 as following (CID 15436).*

If the detected format indicates a non-HT PPDU, refer to the receive procedure and state machine in Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17
(Orthogonal frequency division multiplexing (OFDM) PHY specification) and Clause 18 (Extended Rate
PHY (ERP) specification).

 *To the TGax Editor: modify P.L. 406.17 as following (CID 15457, 15458, 15459).*

~~When~~ If the FORMAT parameter in a PHY-TXSTART.request(TXVECTOR) primitive ~~with the FORMAT parameter~~ is equal to NON-HT and the NON\_HT\_MODULATION parameter is not set to NON\_HT\_DUP\_OFDM, the behavior of the HE PHY is defined in Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), Clause 18 (Extended Rate PHY (ERP) specification) PHYs respectively depends on the parameter NON\_HT\_MODULATION. If the NON\_HT\_MODULATION is OFDM ~~or NON\_HT\_DUP\_OFDM~~, there are additional requirements described in the following subclauses:

— 21.3.9.1 (Transmission of 20 MHz NON\_HT PPDUs with more than one transmit chain)
— 21.3.17.1 (Transmit spectrum mask) instead of 17.3.9.3 (Transmit spectrum mask)
— 28.3.18.3 (Transmit center frequency leakage) instead of 17.3.9.7.2 (Transmitter center frequency leakage)

Where the Clause 28 (High Efficiency (HE) PHY specification) TXVECTOR parameters in Table 28-1
(TXVECTOR and RXVECTOR parameters) are mapped to Clause 15 (DSSS PHY specification for the 2.4
GHz band designated for ISM applications), Clause 16 (High rate direct sequence spread spectrum (HR/
DSSS) PHY specification), Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification), Clause 18 (Extended Rate PHY (ERP) specification) respectively according to Table 28-3 (Mapping
of the HE PHY parameters for NON\_HT operation). The HE PHY parameters not listed in the table are not
present.

If the FORMAT parameter in a PHY-TXSTART.request(TXVECTOR) primitive is equal to NON-HT and the NON\_HT\_MODULATION parameter is set to NON\_HT\_DUP\_OFDM, the behavior of the HE PHY is defined
in Clause 28.3.13 (High Efficiency (HE) PHY specification).

~~NOTE—When the FORMAT parameter is set to NON\_HT and the NON\_HT\_MODULATION parameter is set to
NON\_HT\_DUP\_OFDM in a PHY-TXSTART.request(TXVECTOR) primitive, the behavior of the HE PHY is defined
in Clause 28 (High Efficiency (HE) PHY specification)~~

To support the NON-HT format for an HE STA, when ~~When~~ the HE PHY receives a Clause 28 (High Efficiency (HE) PHY specification) PHY-CONFIG.request(PHYCONFIG\_VECTOR) primitive, the HE PHY shall behave as if it was a Clause 15….

*To the TGax Editor: modify P.L. 429.24, the title of this figure, as following. (CID 15470).*

**Figure 28-13—Transmitter block diagram for the L-SIG, RL-SIG and HE-SIG-A fields for an
HE MU PPDU and for an HE SU PPDU and HE ER SU PPDU ~~when~~ if the Beam Change field is 1 ~~and the HE MU PPDU~~**

*To the TGax Editor: modify P.L. 57.63 as following (CID 15860).*

Indicates the value of the L-SIG Length field of the HE TB PPDU. ~~that is the response to the Trigger frame~~

*To the TGax Editor: replace figure 28-53 with the figure below (CID 16476).*



*To the TGax Editor: replace figure 28-54 with the figure below (CID 16477).*



*To the TGax Editor: replace figure 28-55 with the figure below (CID 16478).*



*To the TGax Editor: modify P.L. 430.37as following. (CID 15921).*

The DCM tone mapper, which is defined in 28.3.11.9 (Constellation mapping) ~~part of the constellation mapper~~, is applied only if…

*To the TGax Editor: insert the following paragraph after the end of 8.3.4.4 at P.L. 60.33. Also remove table 8-4(CID 16055).*

The Clause 28 PHY TRIGVECTOR contains parameters related to the operation of trigger based transmision (see Table 28-2).

*To the TGax Editor: insert the following paragraph and figure in P.L. 432.30 (after figure 28-18). (CID 16708).*

Figure 28-18a (Transmitter block diagram for the Data field of an HE downlink MU-MIMO transmission in 106-, 242-, 484- or 996-tone RU with BCC encoding) shows the transmitter blocks used to generate the Data field of an HE downlink MU-MIMO transmission within a 106-, 242-, 484-, or 996-tone RU with BCC encoding. This also includes the downlink MU-MIMO transmission in an RU that is part of a downlink OFDMA PPDU.



Figure 28-18a - Transmitter block diagram for the Data field of an HE downlink MU-MIMO transmission in 106-, 242-, 484- or 996-tone RU with BCC encoding.

*To the TGax Editor: Modify P.L. 440.28 as following. (CID 16710).*

b) *A*HE-LTF matrix mapping: Apply the *P*HE-LTF matrix to the data tones of the HE-LTF sequence and apply the *R*HE-LTF matrix to pilot subcarriers except the UL MU-MIMO transmission not using HE single stream pilot HE-LTF mode as described in 28.3.10.10 (HE-LTF). There is no pilot mapping for HE TB NDP feedback PPDU.

*To the TGax Editor: Replace figure 28-62, the Rx state machine with the figure below. (CID* 16863, 16864, 16865*).*

**Figure 28-62—PHY receive state machine when midambles are not present**

*To the TGax Editor: Modify P.L. 435.61 as following. (CID 16793).*

d) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields).

CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each
transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).

*To the TGax Editor: Modify P.L. 436.27 as following. (CID 16793).*

d) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream
and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields) before
spatial mapping.

g) CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each
transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).

*To the TGax Editor: Modify P.L. 437.6 as following. (CID 16793).*

h) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields) before spatial mapping.

k) CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each
transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).

*To the TGax Editor: Modify P.L. 437.51 as following. (CID 16793).*

h) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields) before spatial mapping.

k) CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).

*To the TGax Editor: Modify P.L. 438.29 as following. (CID 16793).*

g) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields) before spatial mapping.

j) CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each
transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).

*To the TGax Editor: Modify P.L. 439.8 as following. (CID 16793).*

g) CSD per STS: If the TXVECTOR parameter BEAM\_CHANGE is 0, apply CSD per STS for each space-time stream and frequency segment as described in 28.3.10.2.2 (Cyclic shift for HE modulated fields) before spatial mapping.

j) CSD per chain: If the TXVECTOR parameter BEAM\_CHANGE is 1 or not present, apply CSD per chain for each transmit chain and frequency segment as described in 28.3.10.2.1 (Cyclic shift for pre-HE modulated fields).