IEEE P802.11  
Wireless LANs

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| 802.11  [TGaz SA1 Group CR Part 4]  (relative to P802.11az/D4.1) | | | | |
| Date: 2022-03-08 | | | | |
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**Abstract**

This submission contains resolutions for CIDs 7094, 7096, 7098, 7099 (total of 4).

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| **CID** | **Page/**  **Line** | **Clause** | **Comment** | **Proposed change** | **Resolution** |
| 7094 | 232 | 27.2.2 | RX\_START\_OF\_FRAME\_OFFSET is already present in the baseline document (REVme D0.4 P4295L11). | Delete the row for "RX\_START\_OF\_FRAME\_OFFSET" | Accept.  The change to P802.11az draft already incorporated as part of D4.1, hence no further change needed.  Refer to submission <https://mentor.ieee.org/802.11/dcn/21/11-21-1875-01-00az-comment-resolution-sa1-txvector.docx>  TGaz editor add 7094 to list of CIDs updated in table 27-1 in P.231L.2. |
| 7096 | 232 | 27.2.2 | Why is LTF\_IV optional in TXVECTOR? Does this mean that one can transmit a secure ranging NDP without using LTF\_IV? | Change "O" to "Y" in the TXVECTOR column in the LTF\_IV row. | Accept.  The change to P802.11az draft already incorporated as part of D4.1, hence no further change needed.  Refer to submission https://mentor.ieee.org/802.11/dcn/21/11-21-1875-01-00az-comment-resolution-sa1-txvector.docx  TGaz editor add 7096 to list of addressed CIDs in 27-1 |
| 7097 | 232 | 27.2.2 | What happens if LTF\_REP is not present in the TXVECTOR? How many repetitions should be used? | Change "O" to "Y" in the TXVECTOR column in the LTF\_REP row. | Accept.  The change to P802.11az draft already incorporated as part of D4.1, hence no further change needed.  Refer to submission https://mentor.ieee.org/802.11/dcn/21/11-21-1875-01-00az-comment-resolution-sa1-txvector.docx  TGaz editor add 7097 to list of addressed CIDs in 27-1 |

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| 7099 | 232 | 27.2.2. | 11ax has already been published and does not have/use the TX/RXVECTOR parameter RANGING\_FLAG. So, if 11az now mandates that the RANGING\_FLAG parameter is always present in all HE SU PPDUs, then there will be many places in the standard where we have to add "when TX/RXVECTOR parameter RANGING\_FLAG is 0" for the 'legacy' HE SU PPDU cases. Instead, the RANGING\_FLAG parameter should be made optional, and if the parameter is not present in TX/RXVECTOR, then it should be interpreted as a non-ranging PPDU. | At P232, row for RANGING\_FLAG + FORMAT is HE\_SU: Replace the Value column to "If present, indicates that the PPDU is an HE Ranging NDP. Not present otherwise." Change the TXVECTOR column from "MU" to "O". (Note - since it will need to be an "MU" when present, you might have to define a new type such as "O-MU" to indicate that.) At P232, row for RANGING\_FLAG + FORMAT is HE\_TB: Replace the Value column to "If present, indicates that the PPDU is an HE Ranging TB NDP. Not present otherwise." Change the TXVECTOR column from "MU" to "O". Change "The RANGING\_FLAG is set to 1" to "The RANGING\_FLAG is present" at P180L23, P182L30, P183L32. Change "RANGING\_FLAG is 1" to "RANGING\_FLAG is present" at P231(row for PSDU\_LENGTH), P232(row for LTF\_KEY), P232(row for LTF\_IV), P232(row for LTF\_REP), P233(row for NUM\_USERS), P233(row for SECURE\_LTF\_FLAG), P233(row for TX\_WINDOW\_FLAG). | Revise.  Agree with commenter, additional changes to notes of table 27-1 were needed.  TGaz Editor make changes identified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0400-01> |

**Discussion:**

There are several parameters at play here:

* PSDU\_LENGTH – a value of zero indicates A value of 0 indicates an HE sounding NDP, HE Ranging NDP, or HE TB Ranging NDP.
* FORMAT and RANGING\_FLAG – format of HE\_SU or HE\_TB and Ranging flag true indicate a Ranging NDP or a TB Ranging NDP, it also play part in the format of the ranging NDP such as repetition and LTF IV .
* if the FORMAT is HE SU PPDU, a value MU in the TXVECTOR or RXVECTOR indicates that the parameter is present once.
* if the FORMAT is HE TB PPDU, A value MU in the TXVECTOR indicates that the parameter is present once per user.
* if the FORMAT is HE TB PPDU, a value MU in the RXVECTOR indicates that the parameter is not present (as it was supplied in the triggering PPDU).

**Resolution:**

**TGaz editor make changes identified below to P802.11az D4.1 P.233**

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| Parameter | Condition | Value | TXVECTOR | RXVECTOR |
| PSDU\_LENGTH | FORMAT is HE\_SU, HE\_MU, HE\_ER\_SU or HE\_TB  (#3264) | Indicates the number of octets in the PSDU in the range of 0 to *a PSDUMaxLength* octets (see Table 27-54) A value of 0 indicates an HE sounding NDP, HE Ranging NDP, or HE TB Ranging NDP. (#**5461**, #**5212**) | N | Y |
| Otherwise | See corresponding entry in Table 21-1. (#7338) | | |

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|  | (…existing fields…) | | | |
| TIME\_OF\_DEPARTURE\_REQUESTED | Format is HE\_SU or  (HE\_TB and RANGING\_FLAG ispresent) (#**7105**) | Enumerated type:  True indicates that the MAC entity requests that the PHY entity measures and reports time of departure parameters corresponding to the time when the first frame energy is sent by the transmitting port.  False indicates that the MAC entity requests that the PHY entity neither measures nor reports time of departure parameters. | O | N |
| Format is HE\_ER\_SU or HE\_MU (#**7105**) | Not present | N | N |

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|  | Otherwise | See corresponding entry in Table 21-1(TXVECTOR and RXVECTOR parameters). |  |  |

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| LTF\_KEY | FORMAT is either HE\_SU or HE\_TB and RANGING\_FLAG is present and SECURE\_LTF\_FLAG is 1 | Contains the *rsta-ltf-key* or ista-ltf-key (See [11.21.6.4.5.4](#H11o21o6o4o5o4)) when the secure HE-LTFs are used (see [11.21.6.4.5](#H11o21o6o4o5) ).  (#**2289**, #**1828**, #**1831**) | Y | N |
| Otherwise | Not present (#**2356**, #**2357**, #**2359**) | | |

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| LTF\_IV | FORMAT is either HE\_SU or HE\_TB and RANGING\_FLAG is present and SECURE\_LTF\_FLAG is 1 | Contains the *ltf-iv* (See [11.21.6.4.5.4](#H11o21o6o4o5o4)) used to generate the secure HE-LTFs | Y | N |
| Otherwise | Not present (#**2356**, #**2357**, #**2359**) | | |

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| LTF\_REP | FORMAT is either HE\_SU or HE\_TB and RANGING\_FLAG is present (#**1298**) | Indicate the number of HE-LTF repetitions.  (#**7338**) | Y | N |

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| RANGING\_FLAG  (#**2502**, #**5460**, #**7080**) | FORMAT is HE\_SU | If present, indicates PPDU is the HE Ranging NDP.  Not present otherwise. | O-MU | N |
| FORMAT is HE\_TB | If present, indicate the PPDU is a HE TB Ranging NDP.  Not present otherwise. | O-MU | N |
| Otherwise | Not present. | N | N |

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| NUM\_USERS | FORMAT is HE\_SU, RANGING\_FLAG is present, and and SECURE\_LTF\_FLAG is 1 | Indicating the number of users of an HE Ranging NDP with secure LTF (#**2359**)  If NUM\_USERS is larger than 1, NUM\_STS, LTF\_REP, and LTF\_KEY will be MU | Y | N |
| FORMAT is HE\_SU, HE\_MU, HE\_ER, HE\_ER\_SU or HE\_TB | Not present.  NOTE—number of users for an HE SU PPDU, HE ER SU PPDU or HE TB PPDU is otherwise 1. The number of users for an HE MU PPDU is determined by RU\_ALLOCATION. | N | N |
| Otherwise | See corresponding entry in Table 21-1 (RXVECTOR and RXVECTOR parameters). | | |

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| SECURE\_LTF\_FLAG | FORMAT is either HE\_SU or HE\_TB and RANGING\_FLAG is present | Set to one when the HE Ranging NDP or HE TB Ranging NDP will use secure LTF.  Set to 0 otherwise. | Y | N |
| Otherwise | Not present. | | |

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| TX\_WINDOW\_FLAG | FORMAT is either HE\_SU or HE\_TB and RANGING\_FLAG is 1 and SECURE\_LTF\_FLAG is present | Set to one when r the secure LTF of an HE Ranging NDP or HE TB Ranging NDP will use the optional frequency domain Tx window.  Set to 0 otherwise. | Y | N |
| Otherwise | Not present. | | |

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| NOTE 1—In the “TXVECTOR” and “RXVECTOR” columns, the following apply:  Y = Present;  N = Not present;  O = Optional;  MU indicates that the parameter is present once for an HE SU PPDU and HE ER SU PPDU and present per user  for an HE MU PPDU. For an HE TB PPDU, MU in the TXVECTOR column indicates that the parameter is present  once and MU in the RXVECTOR column indicates the parameter is not present (the receiver knows the values  since they were specified in the triggering PPDU). Parameters specified to be present per user are conceptually  supplied as an array of values indexed by u, where u takes values 0 to NUM\_USERS – 1.  O-MU indicates the parameter is optionally present, if present it has same properties as the MU attribute for RXVECTOR and TXVECTOR columns.  NOTE 2—Refer to Clause 15, 16, 17, 18, 19 and 21 for the TXVECTOR/RXVECTOR parameters that are not present  in this table when FORMAT is not HE\_SU, HE\_MU, HE\_ER\_SU or HE\_TB. |

**TGaz editor make changes identified below to P802.11az D4.1 P.180L.23 as follows**

**11.21.6.4.6 Transmission of a ranging NDP** 19

An RSTA transmitting an HE Ranging NDP to one or more peer ISTAs shall set the TXVECTOR parameter as follows:

— The FORMAT parameter is set to HE\_SU

— The RANGING\_FLAG is present

— The UPLINK\_FLAG parameter is set to 0

— The APEP\_LENGTH parameter is set to 0

**TGaz editor make changes identified below to P802.11az D4.1 P.182L.32 as follows**

An ISTA transmitting an HE Ranging NDP shall set the TXVECTOR parameter as follows:

— The FORMAT parameter is set to HE\_SU

— The RANGING\_FLAG is present

— The UPLINK\_FLAG parameter is set to 1

— The APEP\_LENGTH parameter is set to 0

**TGaz editor make changes identified below to P802.11az D4.1 P.183L.35 as follows**

An ISTA transmitting an HE TB Ranging NDP to an RSTA shall set the TXVECTOR parameter as follows:

— The FORMAT parameter is set to HE\_TB

— The RANGING\_FLAG is present

— The APEP\_LENGTH parameter is set to 0

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| 7090 | 265 | B.4 | SAC exchange for TB operation is not mandatory for HE STAs. | Change "CFHE:M" to "CFHE:O" in the NGPM3.1 row. | **Revise**.  Agree with the commenter that the NGPM3.1 feature is not mandatory to every HE STA, however not all STAs supporting PASN need to implement the SAC just the CFPSEC STA.  **TGaz editor change** NGPM3.1 Status column to read:  CFTB: O  CFPSEC: M |
| 7091 | 265 | B.4 | Non-TB ranging exchange is not mandatory for HE STAs. | Change "CFHE:M" to "CFHE:O" in the NGPM4.1 row. | **Revise.**  Agree in principle with the commenter, NGPM4.1 is not mandatory for every HE STA, support for CFHE is already incorporated into CFNTB.  **TGaz Editor** **delete** CFHE:M from NGPM4.1 Status column. |
| 7092 | 265 | B.4 | Protected LMR exchange in non-TB ranging exchange is not mandatory for HE STAs. | Change "CFHE:M" to "CFHE:O" in the NGPM4.2 row. | **Revise.**  Agree with commenter regarding CFHE however not all STAs implementing PASN may be required to support NTB exchange.  However if PASN is supported and NTB is supported protected LMR Exchange in NTB is required.  TGaz editor change NGPM4.2 Status column to read:  (CFNTB AND  CFPASN): M  CFPSEC: M |
| 7093 | 265 | B.4 | SAC exchange for non-TB ranging operation is not mandatory HE STAs | Change "CFHE:M" to "CFHE:O" in the NGPM4.3 row. | **Revise**  Agree with commenter regarding CFHE, this is the counterpart of 7090 this time for TB operation.  Not all STAs supporting PASN need to implement the SAC just the CFPSEC STA.  **TGaz editor change** NGPM3.1 Status column to read:  CFNTB: O  CFPSEC: M |