IEEE P802.11  
Wireless LANs

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| CR for PHY related comments | | | | |
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| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Feng Jiang | Intel | 3600 Juliette Ln, Santa Clara, CA 95054 |  | feng1.jiang@intel.com |
| Qinghua Li | Intel |  |  | qinghua.li@intel.com |

Abstract

This submission addresses the CIDs related with sections 28.3.19a, 28.3.17b, and 28.3.17c in 11az Draft 1.0

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| CID | Page | Clause | Comment | Proposed Change | Resolution |
| 1335 | 159 | 28.3.19a | For SU PPDU, when the num\_user is more than 1? | as in the comment | Reject  In the secured mode of trigger-based ranging sequence, the DL HE ranging NDP can be shared by multiple ISTA, and each ISTA is allocated separate HE-LTF field for security protection purpose, and for this cae, the num\_usre is more 1. |
| 1368 | 151 | 28.3.19a | Tgaz should have secure ranging as a mandatory feature. We already have non-secure FTM ranging in 802.11-2016. Mandating secure ranging will simplify the spec and the testing associated with it. | Add the following text to the sentence "It is mandatory to support the 2x HE-LTF with 0.8 us GI and 2x HE-LTF with 1.6 us GI. The other combinations of HE-LTF modes and GI duration are disallowed." : "It is also mandatory to support Secure HE-LTFs with randomized LTF sequence " | Reject  The non-secured ranging mode in 11az has lower complexity and better efficieny, and the secured ranging mode has higher complexity and lower efficiency, but this mode provide enhanced security protection for PHY layers, and also sets a high bar for the implementation of the RSTA and ISTA. Setting secured ranging as optional mode helps to accelerate the implementation and deployment of first wave of 11az poduct. |

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| CID | Page | Clause | Comment | Proposed Change | Resolution |
| 1369 | 153 | 28.3.17b | For SU PPDU, when the num\_user is more than 1? | as in the comment | Reject  In the secured mode of trigger-based ranging sequence, the DL HE ranging NDP can be shared by multiple ISTA, and each ISTA is allocated separate HE-LTF field for security protection purpose, and for this cae, the num\_usre is more 1. |
| 1368 | 151 | 28.3.19a | Tgaz should have secure ranging as a mandatory feature. We already have non-secure FTM ranging in 802.11-2016. Mandating secure ranging will simplify the spec and the testing associated with it. | Add the following text to the sentence "It is mandatory to support the 2x HE-LTF with 0.8 us GI and 2x HE-LTF with 1.6 us GI. The other combinations of HE-LTF modes and GI duration are disallowed." : "It is also mandatory to support Secure HE-LTFs with randomized LTF sequence " | Reject  The non-secured ranging mode in 11az has lower complexity and better efficieny, and the secured ranging mode has higher complexity and lower efficiency, but this mode provide enhanced security protection for PHY layers, and also sets a high bar for the implementation of the RSTA and ISTA. Setting secured ranging as optional mode helps to accelerate the implementation and deployment of first wave of 11az poduct. |

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| 1370 | 151 | 28.3.19a | We should remove the 4us Packet Extension associated with the HE Ranging NDP. It seems inefficient use of the medium. | Remove the sentence "Has a Packet Extension (PE) field that is 4 us in duration; when using Secure HE-LTFs with randomized LTF sequence, the PE will start with a zero-power GI." | Reject  The 4us Packet Extenstion field is defined in the HE sounding NDP frame in 11ax, and since the HE Raning NDP in 11az resused the HE sounding NDP frame format, the 4us Packet Extension field shall be kept. |
| 1380 | 151 | 28.3.19a | Due to its simplicity compared to TB ranging, non-TB ranging should be mandatory. | Add the following text to the sentence "It is mandatory to support the 2x HE-LTF with 0.8 us GI and 2x HE-LTF with 1.6 us GI. The other combinations of HE-LTF modes and GI duration are disallowed." : "It is also mandatory to support non-TB ranging." | Reject  In Annex B of 11az draft 1.0, for the HE STA that supports 11az, it’s mandatory feature to support NTB and TB ranging sequences. Since the NTB ranging sequence uses HE ranging NDP for channel sounding, it’s shall be an optional feature for non-HE STA. |
| 2517 | 153 | 28.3.17c | How to generate b\_i is not defined, and is just said to be a 'randomized' LTF. In that case, how can a receiver know what the LTF sequence is? | Either delete the randomized LTF sequence mode (does not work as receiver does not know the sequence used by the transmitter), or properly define it. | Revised  There is a related CID 1821, which also commented on the generation of the random bits for LTF sequence. The generation of b\_i is defined in the document IEEE 11-19-0326r1 which is the CR for CID 1821. The receiver can identify the random LTF sequence based on the SAC field included in the trigger frame for UL NDP in TB or the NDPA frame in NTB  TGaz editor makes changes as specified in 11-19/0326r1 for CID 2517. |

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| CID | Page | Clause | Comment | Proposed Change | Resolution |
| 2501 | 152 | 28.3.19a | When the PHY detects the integrity check error, it shall report the error condition to the MAC. | Please add the following sentence at the end of 28.3.17a (HE Ranging NDP).  "The PHY shall issue the error condition PHY-RXEND.indication(Integrity Check Error) primitive if the PHY detects the integrity check error." | Revised  The “IntegrityCheckError” is used to indicate that during the reception of the HE Ranging NDP PPDU or HE TB Ranging NDP PPDU, an integrity check was performance and failed, and the invalid measurement field shall be set. In current 11az draft 1.0, when to issue this IntegrityCheckError is missing, and spec text is revised accordingly.  TGaz editor makes changes as specified in 11-19/1026r0 for CID 2501. |

*TGaz Editor: please change the last paragraph of section 11.22.6.4.3.4 TB Ranging Measurement Reporting Part on page 100 of 11az D1.0 as below:*

In the secured mode of TB ranging, the PHY shall issue the error condition PHY-RXEND.indication(Integrity Check Error) primitive if the PHY detects the integrity check error. If the PHY of an RSTA issues a PHY-RXEND.indication (IntegrityCheckError) primitive, the RSTA shall set the Invalid Measurement field in the RSTA-to-ISTA LMR frame carrying the TOA measured from the UL NDP to 1. Similarly, if ISTA-to-RSTA LMR was negotiated between the ISTA and RSTA and the PHY of an ISTA issues a PHY-RXEND.indication  
(IntegrityCheckError) primitive, the ISTA shall set the Invalid Measurement field in the ISTA-to-  
RSTA LMR carrying the TOA measured from the DL NDP to 1.

*TGaz Editor: please change the last paragraph of section 11.22.6.4.4.3 Non-TB Ranging Measurement Reporting Part on page 104 of 11az D1.0 as below:*

In the secured mode of Non-TB ranging, the PHY shall issue the error condition PHY-RXEND.indication(Integrity Check Error) primitive if the PHY detects the integrity check error. If the PHY of an RSTA issues a PHY-RXEND.indication(IntegrityCheckError) primitive, the RSTA shall set the Invalid Measurement field in the RSTA-to-ISTA LMR frame carrying the TOA measured from the UL NDP to 1. Correspondingly, if ISTA-to-RSTA LMR was negotiated between the ISTA and RSTA and the PHY of the ISTA issues a PHY-RXEND.indication(IntegrityCheckError) primitive, the ISTA shall set the Invalid Measurement field in the ISTA-to-RSTA LMR carrying the TOA measured from the DL NDP to 1