IEEE P802.11
Wireless LANs

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| LB279 Comment Resolution for CIDs in sec-9 part-3 |
| Date: 2024-01-30 |
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Abstract

This document provides LB279 comment resolutions to CIDs in section 9 based on **11bkD1.0, 11beD5.0, and REVmeD4.2 references**. The CIDs including 1110, 1147, 1011, 1076, 1220, 1221, 1222, and 1226 (8 total).

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1110 | 9.4.2.298 | 25.04 | The Secure HE-LTF subelement needs to be updated. In particular Table 9-413 (Secure HE-LTF protocol section identifier) only defines a Protocol Version 0 for 27.3.18a (HE Ranging NDP and HE TB Ranging NDP), but non for EHT Ranging NDP and EHT TB Ranging NDP. | Please add after "27.3.18a (HE Ranging NDP and HETB Ranging NDP)" "or 36.3.4.1 (EHT Ranging NDP) and 36.3.4.2 (EHT TB Ranging NDP)" | Revised<https://mentor.ieee.org/802.11/dcn/24/11-24-0214-00-00bk-lb279-comment-resolution-for-cids-in-sec-9-part-3.docx> |

*Resolution for CIDs 1110*

*TGbk editor, modify the text in REVmeD4.2 P1534L46 until P1536L51 as follows:*

The Secure ~~HE-~~LTF subelement is included in the IFTMR frame to indicate that the initiator supports use of secure ~~HE-~~LTF and the associated parameters; it is included in the IFTM, if the initiator and the responder successfully negotiate an FTM session where secure ~~HE-~~LTF is used.

The format of the Secure ~~HE-~~LTF subelement is as shown in Figure 9-1037 (Secure ~~HE-~~LTF subelement format(11az)).

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| --- | --- | --- | --- | --- | --- | --- | --- |
|  | B0 B7 | B8 B15 | B16 B18 | B19 | B20 | B21 | B22 B23 |
|  | Subelement ID | Length | Protocol Version | Secure ~~HE-~~LTF Req. | R2I Tx Window | I2R Tx Window | Reserved |
| Bits: | 8 | 8 | 3 | 1 | 1 | 1 | 2 |
| * **Secure ~~HE-~~LTF subelement format(11az)**
 |

The Subelement ID and Length fields are defined in Figure 9.4.3 (Subelements).

The Protocol Version field in the IFTMR frame is set to the value 0 by the ISTA, with values 1 to 7 reserved for future use; see Table 9-413 (Secure ~~HE-~~LTF protocol section identifier(11az)). In the IFTM frame the Version field is set to the value 0 by the RSTA, with values 1 to 7 reserved for future use. The interpretation of the version field in the IFTMR frame and IFTM frame, and the possible resulting actions, are described in 11.21.6.3.4 (Negotiation for secure ~~HE-~~LTF in the TB and non-TB ranging measurement exchange).

The Secure ~~HE-~~LTF Required field is set to 1 by the ISTA to indicate it requires secure HE-LTF to be enabled and is set to 1 by the RSTA to enable a secure ~~HE-~~LTF measurement exchange between an ISTA and an RSTA. Otherwise the Secure ~~HE-~~LTF Required field is set to 0.

The R2I Tx Window field in the IFTMR frame is set to 1 to indicate the ISTA requests use of the optional frequency domain Tx Window in the R2I NDPs, and 0 to indicate the default frequency domain Tx window. In the IFTM frame, the R2I Tx Window field is set to 1 to indicate the RSTA will use the optional frequency domain Tx window in the R2I NDPs, and 0 to indicate the default frequency domain Tx window; see Table 9-413 (Secure ~~HE-~~LTF protocol section identifier(11az)).

The I2R Tx Window field in the IFTMR frame is set to 1 to indicate that the ISTA supports use of the optional frequency domain Tx window in the I2R NDPs, and 0 to indicate the default frequency domain Tx window. In the IFTM frame, the I2R Tx Window field is set to 1 by the RSTA to request that the ISTA use the optional frequency domain Tx window in the I2R NDPs, and 0 to indicate the default frequency domain Tx window; see Table 9-413 (Secure ~~HE-~~LTF protocol section identifier(11az)).

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| * **Secure ~~HE-~~LTF protocol section identifier(11az)**
 |
| **Protocol Version** | **Secure ~~HE-~~LTF PHY sections** |
| 0 | 27.3.18a (HE Ranging NDP and HE TB Ranging NDP) or 36.3.4.1 (EHT Ranging NDP) and 36.3.4.2 (EHT TB Ranging NDP)  |
| 1–7 | Reserved |

* **Secure ~~HE-~~LTF Parameters element(11az)**

The Secure ~~HE-~~LTF Parameters element is optionally included in the IFTM frame, as described in 9.6.7.33 (FTM(11az) frame format), and the LMR frame, as described in 9.6.7.49 (Location Measurement Report (LMR) frame format(11az)) for a secure ~~HE-~~LTF measurement exchange mode of the non-TB ranging and TB ranging measurement exchange (see 11.21.6.4.5 (Secure ~~HE-~~LTF in the TB and non-TB ranging measurement exchange protocol(11az))). The use of the Secure HE-LTF Parameters element is described in 11.21.6 (Fine timing measurement (FTM) procedure).

The format of the Secure ~~HE-~~LTF Parameters element is shown in Figure 9-1038 (Secure HE-LTF Parameters element format(11az)).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Element ID | Length | Element ID Extension | Secure ~~HE-~~LTF Counter | Validation SAC | Measurement SAC | Measurement Result LTF Offset |
| Octets: | 1 | 1 | 1 | 6 | 2 | 2 | 1 |
| * **Secure ~~HE-~~LTF Parameters element format(11az)**
 |

The Element ID, Length, and Element ID Extension fields are defined in 9.4.2.1 (General).

The Secure ~~HE-~~LTF Counter field is used to determine the randomized LTF sequence of an I2R NDP and R2I NDP in one of the following secure ~~HE-~~LTF measurement exchange sequences:

* An I2R NDP and an R2I NDP immediately following a Ranging NDP Announcement frame, in a non-TB ranging measurement exchange (11.21.6.4.4 (Non-TB ranging measurement exchange(11az))).
* A sequence of an I2R NDP, a Ranging NDP Announcement frame, an R2I NDP, in a TB ranging measurement exchange (11.21.6.4.3 (TB ranging measurement exchange(11az))).

The Secure ~~HE-~~LTF Counter field is used in the IFTM frame and the R2I LMR frame when part of a secure ~~HE-~~LTF measurement exchange; it is reserved otherwise.

The Validation SAC field is a nonzero value associated with the secure ~~HE-~~LTF counter carried in the same Secure HE-LTF Parameters element and validates the randomized LTF sequence; see 11.21.6.3.4 (Negotiation for secure ~~HE-~~LTF in the TB and non-TB ranging measurement exchange). This field is used in the initial protected FTM frame, the R2I protected LMR frame and is reserved otherwise.

The Measurement SAC field is used to verify that range measurement results contained in the LMR frame are calculated using the same LTF sequence between ISTA and RSTA. The Measurement SAC field is the same value as the SAC subfield in the STA Info field with AID equal to 2043 in the Ranging NDP Announcement frame that solicited the I2R NDP and the R2I NDP in the non-TB ranging measurement exchange or the SAC subfield in the Trigger Dependent User Info of the Secure Sounding Ranging Trigger frame in the TB ranging measurement exchange; see 11.21.6.4.5 (Secure ~~HE-~~LTF in the TB and non-TB ranging measurement exchange protocol(11az)). This field is reserved in the IFTM frame.

The Measurement Results LTF Offset field is used in TB ranging to verify that the measurement results contained in the LMR frame are calculated using the same LTF Offset for the R2I NDP between RSTA and ISTA. The Measurement Result LTF Offset field has the same value as the LTF Offset subfield in the corresponding STA Info field of the Ranging NDP Announcement frame preceding the R2I NDP, which was used for estimating the measurement results contained in the LMR frame. The Measurement Result LTF Offset field is structured as shown in Figure 9-1039 (Measurement Result LTF Offset field format(11az)). This field is not used in the IFTM frame nor in the LMR frames in non-TB ranging.

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|  | B0 B5  | B6 B7 |
|  | LTF Offset | Reserved |
| Bits: | 6 | 2 |
| * **Measurement Result TF Offset field format(11az)**
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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1147 | 9.4.2.298 | 22.08 | The Max R2I LTF Total and Max I2R LTF Total field are currently only considering HE-LTFs but not EHT-LTFs see P1518L47-65 in REVme D4.1. | Please remove "HE-" from each occurence of "HE-LTF" in P1518L47-65 in REVme D4.1. | Revised<https://mentor.ieee.org/802.11/dcn/24/11-24-0214-00-00bk-lb279-comment-resolution-for-cids-in-sec-9-part-3.docx> |

*Resolution for CIDs 1147*

*TGbk editor, modify the text in REVmeD4.2 P1530L50 until P1531L9 as follows:*

The Max R2I LTF Total and Max I2R LTF Total subfields indicate the maximum number of HE-LTFs or EHT-LTFs to be destined to an ISTA in the R2I NDP and an RSTA in an I2R NDP, respectively, the encoding is given in Table 9-411 (Max R2I/I2R LTF Total subfields(11az)). The maximum number of HE-LTFs or EHT-LTFs limits the allowed combinations of number of space-time streams and ~~HE-~~LTF repetitions.

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| * Max R2I/I2R LTF Total subfields(11az)
 |
| Field value | Max number of HE-LTFs or EHT-LTFs |
| 0 | 4 |
| 1 | 8 |
| 2 | 16 |
| 3 | 64 |

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| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1011 | 9.4.2.298 | 24.18 | The 320 MHz Ranging subelement introduces two new fields "Max R2I Nss=320MHz" and "Max I2R Nss = 320MHz". However, similar fields defined in the Ranging Parameters field (e.g., "Max R2I STS=160MHz") use STS instead of Nss. | Use consistant termonology across the Ranging Parameters field and 320 MHz Ranging subelement with respect to STS or Nss. | RejectedThe term SS (Spatial Stream) is used in 11be for EHT whereas the term STS (Spatial Time Stream) is used for 11ax as the 11be TG members decided to deprecate STBC for EHT design. Therefore, SS term seems adequate. |
| 1076 | 9.4.2.298 | 23.01 | Tale 9-322al: field values 6 and 7 are added, but not explained. | See comment | Rejected?Field values 6 and 7 are added by different Task Group (i.e. NGV) hence not explained in this specification but will be explained as part of the baseline. |
| 1220 | 9.4.2.298 | 23.01 | dot11NGVOptionImplemented doesn't exist | Delete the NOTE and rows 6 and 7 | Rejected? |
| 1221 | 9.4.2.298 | 23.01 | Is it not possible to do EHT with >1 LO? | Either delete "(single RF LO)" (and "as 320 MHz single-LO" at line 7) or add a row for two separate RF LOs | Rejected?TG members decided that it is valuable to include “single RF LO” reference as it helps minimizing the IOT issues |
| 1222 | 9.4.2.298 | 23.07 | Why no support for 320M 1-LO with 160M 2-LO? | Clarify | RejectedTG memberd decided that 320MHz single RF LO removes IOT issues if the selected option for 160MHz is also single RF LO. |
| 1226 | 9.4.2.298 | 24.21 | "indicates for the bandwidth of 320 MHz the maximum 22 number of spatial streams to be used in R2I NDP in the session. " -- indicates it how? Is 0 reserved? Also odd wording | Change to "contains, for 320 MHz bandwidth, the maximum number of spatial streams to be used in an R2I NDP in the session, minus one.". Similarly at top of next page | Revised<https://mentor.ieee.org/802.11/dcn/24/11-24-0214-00-00bk-lb279-comment-resolution-for-cids-in-sec-9-part-3.docx> |

*Resolution for CIDs 1226*

*TGbk editor, modify the text in 11bk.D1 P24L21 until P25L2 as follows*

The Max R2I Nss = 320 MHz field indicates ~~for the bandwidth of 320 MHz~~ the maximum number of spatial streams to be used in R2I NDP for 320MHz PPDU bandwidth transmissions in the session.

The Max I2R Nss = 320 MHz field indicates ~~for the bandwidth of 320 MHz~~ the maximum number of spatial streams to be used in I2R NDP for 320MHz PPDU bandwidth transmissions in the session.

**References: P802.11bkD1.0, P802.11beD5.0 & P802.11REVmeD4.0**