IEEE P802.11
Wireless LANs

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| LB240 Secure TRN PHY CIDs |
| Date: 2019-03-21 |
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|  |  |  |  |  |

Abstract

This document proposes resolution to LB240 CIDs on clause 29 (Secure TRN PHY).

CID List: 1097, 2382, 1000, 1304, 1001, 1173, 1174, 3290, 3272, 2383, 1422, 1175, 1176, 1177, 2374, 2375, 2376, 1304, 1307, 1008, 1004, 1006, 1048, 1009, 1010, 1041, 1054, 1004, 1041, 1033, 1035, 1087, 1088

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| 1097 | 165.08 | 8 | 29 | Is the Secured EDMG Ranging works with OFDM?If yes, then text should include different text for the SC and OFDM versions. |
| 2382 | 157.00 |  | 29.1.1 | Is channel bonding supported and/or OFDM mode supported in 11az? The early section mention 2.16+2.16 or 4.32 + 4.32 is inlcuded. "2.16 GHz, 4.32 GHz, 6.48 GHz, and 8.64 GHz PEDMG secure ranging PPDU using EDMG SC mode (transmit and receive)" |

Proposed Resolution: **Reject**

**Discussion**

In line 14 of the same page, in the listing of features, it is clearly defined the secure TRN are working only with EDMG SC mode, there is no need to describe OFDM or its features.

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| 1000 | 159.09 | 9 | 29.3.3.3.2.3 | Provide more clarity on which Secure TRN sequences to use based on the TRN field specified in 29.9.3.5. Clause 29.3.5 doesn't exist. There is no mention of Secure TRN in the 11ay draft. | Provide clarity based as commented |
| 1033 | 159.09 |  | 29.3.3.3.2.3 | Provide more clarity on which Secure TRN sequences to use based on the TRN field specified in 29.9.3.5. Clause 29.3.5 doesn't exist. There is no mention of Secure TRN in the 11ay draft. | Provide clarity based as commented |

Proposed Resolution: **Revise**

**Discussion:**

Section 29.9.3.5 apears later in this document, and is not present in the 11ay draft.

***TGaz Editor: Change the text in Description column of the Secure TRN line in Table 54 (EDMG-MCS field definition when the Number of SS field is 0) as follows:***

(#1000) Corresponds to the TXVECTOR parameter SECURED\_TRN. When set to 1, indicates that the TRN field, if present, in the PPDU contains Secure TRN Sequences specified in 29.9.3.5. Otherwise the TRN field, if present, uses the format specified in 29.9.2.2.5.

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| 1304 | 159.09 | 9 | 29.3.3.3.2.3 | "Reserved 8" the reserved field has 14 bits, not 8 (based on 11ay D3.0) | replace the value of 8 in the reserved column with 14. |

Proposed Resolution: **Accept**

***TGay Editor: Modify the length column of the Reserved Line of table 54 (EDMG-MCS field definition when the Number of SS field is 0) as follows:***

14(#1304)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1001 | 159.16 | 16 | 29.4.2.3 | The normative sentence describing the cyclic shift applied to TRN units containing Secure TRN Sequences should be added and re-written to the sentence in clause 29.4.2.3 Line 1, pg. 460. | As commented |
| 1035 | 159.16 |  | 29.4.2.3 | The normative sentence describing the cyclic shift applied to TRN units containing Secure TRN Sequences should be added and re-written to the sentence in clause 29.4.2.3 Line 1, pg. 460. | As commented |

Proposed Resolution: **Revised**

**Discusion**

This subclause is about control PHY. The TXVECTOR made clear that only SC mode should be used. This whole subclause needs to be removed.

***TGay Editor: Remove subclause 29.4 and its subclauses from the draft***

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| 1173 | 34.12 | 12 | 29.9.3.5.1 | What does 211 reference? There is no Figure 211 | Replace 211 with Figure 200 |
| 1174 | 34.12 | 12 | 29.9.3.5.1 | Variables P, M, N can confuse the reader as they are not defined in 802.11ay. It is better to use the variable names defined in the spec | Replace the first sentence with "The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU is shown in Figure 200 (TRN field structure of EDMG BRP-TX packets) with TRN Subfield Sequence Length = 0, EDMG TRN Length = 1, RX TRN-Units per Each TX TRN-Unit = 0, EDMG TRN-P = 0, EDMG TRN-M = 3, and EDMG TRN-N = 3. |
| 2390 | 161.12 |  | 29.9.3.5.1 | Wrong reference. Not sure if the referenced figure exists. | Correct "211 (TRN field structure of EDMG BRP-TX packets)" and add an appropriate figure. |
| 2373 | 161.12 |  | 29.9.3.5.1 | Variables P, M, N can confuse the reader as they are not defined in 802.11ay. It is better to use the variable names defined in the spec | Replace the first sentence with "The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU is shown in Figure 200 (TRN field structure of EDMG BRP-TX packets) with TRN Subfield Sequence Length = 0, EDMG TRN Length = 1, RX TRN-Units per Each TX TRN-Unit = 0, EDMG TRN-P = 0, EDMG TRN-M = 3, and EDMG TRN-N = 3. |
| 2383 | 161.00 |  | 29.9.3.5.1 | The use of P, M and N quoted below is not consistent with 11ay text.In 29.9.2.2.5 of D3.0 11ay (or see Table 57), it stated that1) P = value of EDMG TRN-Unit P field2) M= value of the EDMG TRN-Unit M field + 13) N= value of the EDMG TRN-Unit N fieldThis means that M is the actual value sent over the air. The N=0 is also wrong as it means that the AWVs may change every TRN subfield, which does not apply here. The correct value of N is 3 corresponds to the AWVs cannot change during the 4 TRN subfieldsSo in summary, M=4 (i.e. value of the EDMG TRN-Unit M field in the Header-A = 3), and N=3 (i.e. value of the EDMG TRN-Unit N field in the Header-A =3) should be the correct values."The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU is shown in 211 (TRN field structure of EDMG BRP-TX packets) with P=0, M=4, and N=0 where P is the value of the EDMG TRN-P field in the header plus one, M is the value of the EDMGTRN-M field in the header plus one and N is the value of the EDMG TRN-N field in the header plus one." | Replace the paragraph below"The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU is shown in 211 (TRN field structure of EDMG BRP-TX packets) with P=0, M=4, and N=0 where P is the value of the EDMG TRN-P field in the header plus one, M is the value of the EDMGTRN-M field in the header plus one and N is the value of the EDMG TRN-N field in the header plus one."with"The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU shall correspond to the following configurations:- Packet Type- EDMG TRN Length = 1- RX TRN-Units per Each TX TRN-Unit = 0,- TRN Subfield Sequence Length = 0,- value of the EDMG TRN-P field in the Header-A =0,- value of the EDMG TRN-Unit M field in the Header-A = 3,- value of the EDMG TRN-Unit N field in the Header-A =3 |

Proposed Resolution: **Revise**

***TGaz Editor: Change the first paragraph of 29.9.3.5.1(P161L11) with the following***

The TRN field structure containing the Secure TRN subfields in PEDMG secure ranging PPDU is shown in figure 214 (TRN field structure of EDMG BRP-TX packets). (#1174) The header fields related to TRN should be set according to the table 1.

Table 1- EDMG-A Header fields setting for secure PEDMG TRNs (#2383)

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| --- | --- |
| Header Field | value |
| Packet Type | 1 |
| EDMG Beam Tracking Request | 0 |
| EDMG TRN Length | 1 |
| RX TRN-Units per Each TX TRN-Unit | 0 |
| EDMG TRN-Unit P | 0 |
| EDMG TRN-Unit M | 3 |
| EDMG TRN-Unit N | 3 |
| TRN Subfield Sequence Length | 0 |

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| --- | --- | --- | --- | --- |
| 1422 | 161.16 | 29.9.3.5.1 | "In a PEDMG secure ranging PPDU, all TRN subfields of all TRN-Units shall be transmitted using the same AWV as the preamble and data field of the PPDU." | Does PEDMG secure ranging make use of EDMG BRP-TX packets, EDMG BRP-RX packets, or EDMG BRP-RX/TX packets? This must be defined. |

Proposed Resolution: **Revise**

***TGaz Editor: Modify the second pargraph of 29.9.3.5.1 (P161L16-19) as follows:***

(#1422) PEDMG secure ranging PPDUs are EDMG BRP-TX PPDUs. In such PPDUs, all TRN subfields of all TRN-Units shall be transmitted using the same AWV as the preamble and data field of the PPDU. The EDMG TRN-Unit M field in the EDMG-A header shall be set to 3 so that each TRN-Unit shall have 4 secure TRN subfields that contains Secure TRN sequences.

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| 1176 | 34.00 | 29.9.3.6 | The symbol block structure for the normal GI is shown in both Figure 200a and 200b, where the only difference is the channel bonding. Both of these figures described a SU PPDU. Hence, the last two sentence of the first paragraph makes no sense | Replace the last sentences with "The symbol block for for the normal GI is shown in Figure 200. |
| 1177 | 34.00 | 29.9.3.6 | Third paragraph is redundant | Delete third paragraph of section |
| 1175 | 34.20 | 29.9.3.6 | Incorrect use of shall | Replace first sentence with "The chip rate for a PEDMG secure ranging PPDU transmitted over a channel bandwidth of 2.16, 4.32, 6.48, 8.64 GHz is N\_CBx1.76 GHz. " |
| 2375 | 161.00 | 29.9.3.6 | The symbol block structure for the normal GI is shown in both Figure 200a and 200b, where the only difference is the channel bonding. Both of these figures described a SU PPDU. Hence, the last two sentence of the first paragraph makes no sense | Replace the last sentences with "The symbol block for for the normal GI is shown in Figure 200. |
| 2376 | 161.00 | 29.9.3.6 | Third paragraph is redundant | Delete third paragraph of section |
| 2374 | 161.20 | 29.9.3.6 | Incorrect use of shall | Replace first sentence with "The chip rate for a PEDMG secure ranging PPDU transmitted over a channel bandwidth of 2.16, 4.32, 6.48, 8.64 GHz is N\_CBx1.76 GHz. " |
| 1306 | 161.32 | 29.9.3.6 | "shall support the SU PPDU structure": it is not a PPDU structure but rather a TRN subfield structure. | replace with "shall support the TRN subfield structure" |
| 1307 | 162.02 | 29.9.3.6 | "PEDMG secure ranging PPDU over 2.16 GHz channel": it is not a PPDU, it is a TRN subfield | replace "PPDU" with "TRN subfield" in the subtitles of figures 200a and 200b. |

Proposed Resolution: **Revise**

***TGaz Editor: Replace the 1st pargraph of 29.9.3.6 with the modified text (of the 3rd paragraph) as follows (P161L20-23)***

(#1176)A PEDMG secure ranging PPDU transmission over a 2.16GHz, 4.32 GHz, 6.48 GHz, and 8.64 GHz channel is defined at the *NCB*×1.76 GHz chip rate. The symbol blocking structure for the normal GI is as shown in Figure 200. A PEDMG STA shall support the TRN field structure with normal GI as shown in Figure 200.

***TGaz Editor: Modify the 2nd paragraph of 29.9.3.6 (P161L24-28) as follows:***

A PEDMG secure ranging PPDU shall have a single spatial stream ($i\_{STS}=1$) mapped to a single transmit chain (*iTX* =1) as defined in 29.5.10.2.The single transmit chain is chosen by the first path beamforming training procedure in 10.43.10.6. All fields of PEDMG secure ranging PPDU shall be transmitted with the same single transmit chain and AWV chosen by the first path beamforming training procedure.

***TGaz Editor: Remove the 3rd paragraph of 29.9.3.6 (P161L29-33) as follows:***

***TGaz Editor: remove figure 200a and its caption. (#1176)***

***TGaz Editor: Modify the caption of figure 200b as follows:***

**Figure 200 – PEDMG secure ranging (#1176) TRN subfield structure over 2.16, 4.32, 6.48, and 8.64 GHz channel.**

***TGaz Editor: Modify the text in P162L7-9 as follows***:

As shown in Figure 200(#1176), each secure TRN subfield shall consist of five consecutive segments:

GI: the $GIe\_{64×NCB }^{1}$as defined in subclause 29.5.9.1;

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| 1006 | 162.12 | 29.9.3.6 | Need clarification in text, Table 40 |  |
| 1044 | 162.12 | 29.9.3.6 | Need clarification in text, Table 40 |  |
| 1008 | 162.14 | 29.9.3.6 | Table should referenced to 11ay D3.0 | Change text to read: "Table 46" |
| 1048 | 162.14 | 29.9.3.6 | Table should referenced to 11ay D3.0 | Change text to read: "Table 46" |
| 1009 | 162.15 | 29.9.3.6 | Grammar and incorrect clause referenced for constellation maps | Change text to read: "The constellation mapper maps..." |
| 1010 | 162.15 | 29.9.3.6 | This paragraph discusses and references the SECURE\_TRN\_SEQUENCE. It then start discussing the constellation mapper to sequence of bits to constellation points and references sub-clause 29.4.5.2.4 which not corrected. This segment (Secure ranging field) needs clarification describing both 2.16 GHz in Figure 200a and Figure 200b for 4.32, 6.48 and 8.64 GHz channels | Clarify as commented |
| 1049 | 162.15 | 29.9.3.6 | Grammar and incorrect clause referenced for constellation maps | Change text to read: "The constellation mapper maps..." |
| 1051 | 162.15 | 29.9.3.6 | This paragraph discusses and references the SECURE\_TRN\_SEQUENCE. It then start discussing the constellation mapper to sequence of bits to constellation points and references sub-clause 29.4.5.2.4 which not corrected. This segment (Secure ranging field) needs clarification describing both 2.16 GHz in Figure 200a and Figure 200b for 4.32, 6.48 and 8.64 GHz channels | Clarify as commented |

Proposed Resolution: **Revise**

***TGaz Editor: Modify the text in P162L11-16***

Secure ranging field: A Secure ranging waveform composed of 384\* NCB -π/2-BPSK modulated channel symbols. The modulated symbols are based on bit sequences of length 384\*NCB which are taken from the binary pseudo-random sequence SECURE\_TRN\_SEQUENCE in the TXVECTOR parameters as defined in Table (#1010) 43 (TXVECTOR and RXVECTOR parameters). Each group of 384\*NCBbits is taken consecutively without overlap from the sequence. The constellation mapper maps the sequence of bits to constellation points; see subclause 29.5.9.5.1;

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| 1004 | 162.20 | 29.9.3.6 | Throughout the draft, references to clause numbers state "section" 29.9.2.2.7". Remove text "section" | Remove the word "section" preceding the clause numbers throughout D1.0 as commented. |
| 1041 | 162.20 | 29.9.3.6 | Throughout the draft, references to clause numbers state "section" 29.9.2.2.7". Remove text "section" | Remove the word "section" preceding the clause numbers throughout D1.0 as commented. |

Proposed Resolution: **Revised**

***TGaz Editor: Modify the text in P162L18-20 (last two pargraphs of 29.9.3.6) as follows:***

GI: the $GIe\_{64×NCB }^{1}$ as defined in subclause 29.5.9.1. (#1041)

The overall length of each Secure TRN subfield is the same as each TRN subfield defined as in subclaise 29.9.2.2.6.

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| 1087 | 170.16 | 29.9.3.6 | Incorrect reference: BPSK modulation in 29.4.5.2.4 is for CPHY data and not suited for TRNs. | Fix the reference | Revised (Accept In principle) |

***TGaz Editor: Modify the text in P174L15 (29.9.3.6) as follows:***

constellation points; see 20.5.3.2.4.2;

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| 1088 | 170.20 | 29.9.3.6 | Incorrect reference: SC TRNs are used for Secure Ranging and they are NOT defined in 29.9.2.2.7 (which is for OFDM) | Fix the reference | Revised (Accept In principle) |

***TGaz Editor: Modify the text in P174L20 (29.9.3.6) as follows:***

The overall length of each Secure TRN subfield is the same as each TRN subfield defined as in 29.9.2.2.6.

**References:**