IEEE P802.11
Wireless LANs

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| 802.11[Resolutions to a set of LB240 CIDs (part-8)(relative to IEEE 802.11 REVmd D2.0 and P802.11az D1.4) |
| Date: 2019-10-09 |
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**Abstract**

This submission proposes resolutions to the following LB240 CIDs 1432, 1433, 2124, 2125, 2126, 2127, 2129, 2130.

History:

R0: Initial Version

R1: Updates from the discussion in the July 31st teleconference

R2: Updated after verifying that content that is currently proposed to be added to Clause 11.22.6.3.2 (and is slated to be moved/deleted) is part of Clause 11.22.6.3.5 or Clauses 11.22.6.4{7|8|9}. Pooled in other CIDs that have a relation to the text changed/inserted/deleted.

R3: Incorporated review comments from Assaf

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| 1432 | 79.00 | 11.22.6.1 | "For DMG and EDMG, an FTM session shall be preceded by a first path beamforming training asdescribed in 10.39.9.6 First Path Beamforming Training." First path beamforming is only specified for EDMG, and can only be perfomerd if EDMG Capabilities allow. | Describe the correct behaviour. | REVISE. Incorporate editor instructions corresponding to CID 1432 in submission 11-19-1422r3, also, *Editor: remove the text in P146L25-26 (which was supposed to be removed as part of the resolution of e.g CID2381* |

***TGaz Editor: Delete P146L25-26 (the first paragraph of Cl. 11.22.6.4.7).***

***Note: This editor instruction is part of the resolution to CID 2381.***

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| 1433 | 11.22.6.2 | 82.10 | Missing sentence to clarify to what the bullets relate to. | If the STA in which dot11FineTimingMsmtRespActivated is true supports, .. And correct the changing fonts | Revise. Incorporate the editor instructions in submission 11-19-1276.No further changes required. |
| 2125 | 48.10 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]Too many full stops | Delete one of them | Reject. 11.22.6.2 FTM Capabilities in D1.0 (P82L19-24) already deleted the redundant full stop. |

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| 2124 | 48.08 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]" DMGz Ranging, it shall set the DMG Range Measurement field of the ExtendedCapabilities element to 1. Otherwise it shall set the Multi User Range Measurement field of the Extended Capabilities element to 0" -- wrong field | Change "Multi User Range Measurement field" to "DMG Range Measurement field". Ditto at line 15 for EDMG | Revise. Incorporate editor instruction in submission 11-19-1368r2.  |

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| 2126 | 48.12 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]"one of the first 4 subfields of this field" is too brittle to be spec language | Refer to the fields explicitly | Revise. Incorporate editor instructions in submission 11-19-1368r2 |
| 2127 | 48.18 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]"one of the first 4 subfields of this field" is too brittle to be spec language | Refer to the fields explicitly | Revise. Incorporate editor instructions in submission 11-19-1368r2 |
| 2129 | 48.20 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]Two things look suspect with e). It's for the same case as d). The subfield referred to does not exist | Refer to the EDMG Ranging Supported subfield, and merge with d) | Revise. D1.0 P82L25-32 merged the referred bullets ((d) and (e)) into a single bullet ((d)) describing PEDMG. No further changes required. |
| 2130 | 48.22 | 11.22.6.2 | [Re-raising this comment from the comment collection, as it is not possible to determine from 18/1544r8 whether/how it was addressed. References are to the CC draft and hence may be wrong against D1.0.]"Otherwise it shall set to 0. " -- shall set what? | Spell it out, as for other cases | Revise. Incorporate editor instructions in submission 11-19-1368r2. All instances of “Otherwise it shall set it to 0” have been replaced with “Otherwise it shall set <field/subfield of the containing element/field> to 0” |

Discussion: The list should not be bulleted. The contents of the (now bulleted) list should conform to how the related statements are constructed in the baseline.

The relationship between MIB variables and the corresponding field in the Extended Capabilities element is described in Table 9-153. However Table 9-153 is not normative. Hence it has to be restated (in normative language) in Clause 11.

Cl. 11.22.6.2 is missing details on how the setting of the MIB variables dot11SecureLTFImplemented and dot11RSTARequiresPMFActivated relate to the corresponding fields in the Extended Capabilities element.

Resolution: REVISE

***TGaz Editor: The following paragraphs in Cl. 11.22.6.2 already exist in the baseline and should not be shown as new text (should not be underlined).***

A STA in which dot11FineTimingMsmtRespActivated is false shall set the Fine Timing Measurement Responder field of the Extended Capabilities element to 0.

A STA in which dot11FineTimingMsmtInitActivated is false shall set the Fine Timing Measurement Initiator field of the Extended Capabilities element to 0.

***TGaz Editor: Modify the inserted paragraphs in Cl. 11.22.6.2 as shown below:***

A STA in which (#1433) dot11NonTriggerBasedRangingRespImplemented is true shall set the non-TB Ranging Responder field of the Extended Capabilities element to 1. Otherwise it shall set the non-TB Ranging Responder field of the Extended Capabilities element to 0.

A STA in which (#1433) dot11TriggedBasedRangingRespImplemented is true shall set the TBRanging Responder field of the Extended Capabilities element to 1. Otherwise it shall set the TB Ranging Responder field of the Extended Capabilities element to 0.

A STA in which dot11FineTimingMsmtRespActivated is true and dot11SecureLTFImplemented is true shall set the Secure LTF Support field of the Extended Capabilities element to 1. Otherwise it shall set the Secure LTF Support field to 0.

A STA in which dot11RSTARequiresPMFActivated is true shall set the Protection of Range Negotiation and Measurement Management Frames Required field of the Extended Capabilities element to 1. Otherwise it shall set the Protection of Range Negotiation and Measurement Management Frames Required field to 0.

 A non-EMDG STA which implements support for the mechanisms described in 11.22.6.3.6 (Negotiation for direction measurement for PDMG/PEDMG) and in 11.22.6.4.2.1 (PDMG/PEDMG measurement exchange) (#1433) shall set the DMG Range Measurement field of the Extended Capabilities element to 1. Otherwise it shall set the DMG Range(#2124) Measurement field of the Extended Capabilities element to 0. An EDMG STA which implements support for mechanisms described in 11.22.6.3.6 (Negotiation for direction measurement for PDMG/PEDMG), in 11.22.6.4.2.1 (PDMG/PEDMG measurement exchange) and in 11.22.6.4.2.1.6 (Secure measurement exchange for EDMG STAs) (#1433)shall set the EDMG Range Measurement field of the Extended Capabilities element to 1. Otherwise it shall set the EDMG Range Measurement field of the Extended Capabilities element to 0. It may also set the EDMG OFDM Range Measurement field of the Beamforming Capabilities subelement to 1 if it additionally supports OFDM ranging. Otherwise it shall set the EDMG OFDM Range Measurement field of the Beamforming Capabilities subelement to 0.

***TGaz Editor: Add the following paragraphs to the start of Cl. 11.22.6.3.6 as shown below:***

**11.22.6.3.6 Negotiation for Direction Measurement for PDMG/PEDMG**

A STA that supports

* Inclusion of a TRN field in the transmitted Fine Timing Measurement frame to facilitate Angle of Arrival measurements at the recipient shall set the AoA TX Capability subfield in the DMG Direction Measurement Capabilities field in the DMG Capabilities element to 1. Otherwise it shall set the AoA TX Capability subfield to 0.
* Angle of Arrival estimation using the TRN field included in the received Fine Timing Measurement frame shall set the AoA RX Capability subfield in the DMG Direction Measurement Capabilities field in the DMG Capabilities element to 1. Otherwise it shall set the AoA RX Capability subfield to 0.
* Inclusion of antenna setting specific TRN field(s) in the transmitted Fine Timing Measurement frame to facilitate Angle of Departure estimation(s) at the recipient shall set the AoD TX Capability subfield in the DMG Direction Measurement Capabilities field in the DMG Capabilities element to 1. Otherwise it shall set the AoD TX Capability subfield to 0.
* Angle of Departure estimation using the TRN field(s) included in the received Fine Timing Measurement frame shall set the AoD RX Capability subfield in the DMG Direction Measurement Capabilities field in the DMG Capabilities element to 1. Otherwise it shall set the AoD RX Capability subfield to 0.

A STA that supports

* First Path Beamforming Training it shall set the First Path Beamforming Training Supported field of the Beamforming Capability subelement in the EDMG Capabilities element to 1. Otherwise it shall set the First Path Beamforming Training Supported field to 0.
* Secure ToF it shall set the Secure ToF Supported field of the Beamforming Capability subelement in the EDMG Capabilities element to 1. Otherwise it shall set the Secure ToF Supported field to 0.
* EDMG SC Ranging it shall set the EDMG SC Ranging Supported field of the Beamforming Capability subelement in the EDMG Capabilities element to 1. Otherwise it shall set the EDMG SC Ranging Supported field to 0. A STA shall not set the Secure ToF Supported field if it has not also set to 1the First Path Beamformign Training Supported field of the Beamforming Capability subelement in the EDMG Capabilities element.
* EDMG OFDM Ranging it shall set the EDMG OFDM Ranging Supported field of the Beamforming Capability subelement in the EDMG Capabilities element to 1. Otherwise it shall set the EDMG OFDM Ranging Supported field to 0.