IEEE P802.11
Wireless LANs

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| LB240 Resolution of CID1295 |
| Date: 2019-09-10 |
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Abstract

Resolution of CID2124, 1059

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| --- | --- | --- | --- | --- | --- |
| 1059 | 37.07 | 9.4.2.127 | Names mixup related to DMG Capabilities element. In some parts it is DMG in other DMG/EDMG. In Table 9.547a there is no DMG or EDMG in the names but in the following text explaining the fields the names are with DMG/EDMG. | Update the entier section 9.4.2.127 with consistent names | **Revise as in 11-19-1537** |
| 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 as in 11-19-1537** |

Discussion:

The text in 9.4.2.127 refers to DMG/EDMG where in many cases DMG STA is OK because it also covers EDMG STAs. However, it may be better to use the terms PDMG/PEDMG STA, however these terms are defined only by a capability bits (DMG Ranging Measurement, EDMG Ranging Measurement), and no behaviour is realy dependent on this bits. We propose to remove these bits, and define PDMG and PEDMG by capability bits that actual control protocol behaviour.

***TGaz Editor: Modify the text in P58L7-23 (9.4.2.127.9) as follows:***

A DMG STA sets the AOA TX Capability subfield to 1 to indicate the ability to attach a TRN field to an FTM frame for the purpose of allowing the receiver of that frame to perform Angle of Arrival (AOA) estimation.

A DMG STA sets the AOA RX Capability subfield to 1 to indicate the ability to estimate the AOA based on a TRN field attached to an FTM frame.

A DMG STA sets the AOD TX Capability subfield to 1 to indicate the ability to attach a TRN field, possibly with different antenna settings to different TRN subfields, to an FTM frame, or the purpose of allowing the responder to estimate the Angle of Departure (AOD) of the packet.

A DMG STA sets the AOD RX Capability subfield to 1 to indicate the ability to estimate the AOD based on a TRN field attached to a Fine Timing Measurement frame and send a report.

A DMG STA sets the AOD Feedback Best TRN subfield to 1 to indicate the ability to send a best TRN subfield index, based on measurement on a TRN field sent by the receiver STA, for the purpose of AOD estimation.

A DMG STA sets the AOD Channel Measurement Feedback subfield to 1 to indicate the ability to send a Channel Measurement Feedback element based on measurement on a TRN field sent by the peer RSTA, for the purpose of AOD estimation

***TGaz Editor: Modify the text in P60L8 as follows:***

For Secure EDMG ranging, the Secure ToF Measurement subfield is set to 1 by an ISTA to request a

***TGaz Editor: Modify the text in P60L15 as follows:***

exchange. Otherwise the Secure ToF Measurement field is set to 0. In cases other than Secure EDMG ranging, the Secure ToF Measurement subfield is reserved.

***TGaz Editor: in P20L17-21 (3.2) change the text as follows:***

**Enhanced Directional Multi-Gigabit (EDMG) secure ranging physical layer (PHY) protocol data unit (PPDU)**: An enhanced directional multi-gigabit single user physical layer (PHY) protocol data unit (EDMG SU PPDU) that contain Secure training (TRN) subfields in the training (TRN) field to enable secure ranging with physical layer (PHY) level security. (#**2020**, #**1486**)

***TGaz Editor: remove the definitions of PDMG and PEDMG in P21L15-16***

***TGaz Editor: in talbe 9-100 (Measurement type definitions for measurement requests) modify the first column of the first line as follows:***

|  |
| --- |
| Neighboring DMG/EDMG APs |

***TGaz Editor: in table Table 9-153—Extended Capabilities element modify the line of PDMG/PEDMG supporting APs in the area as follows***

|  |  |  |
| --- | --- | --- |
| <ANA> | DMG location supporting APs in the area | An AP STA sets this field to 1 to indicate that APs providing location services using DMG are in the vicinity of the AP STA. Definition of vicinity is implementation dependent. The AP may be capable of providing information about those DMG APs. |

***TGaz Editor: in Figure 9-334—BSSID Information field (P56) change the columne of B14 as follows:***

|  |
| --- |
| B14 |
| DMG Positioning |
| 1 |

***TGaz Editor: Change the text in P57L4 as follows:***

The DMGPositioning field indicates that the AP supports DMG positioning.

***TGaz Editor: in Figure 9-10000 – (DMG Fine Timing and Range Measurement Capability Information field format) Change the column of B2 as follows:***

|  |
| --- |
| 2 |
| DMG location supporting APs in the area |
| 1 |

***TGaz Editor: change the text in P59L14-18 (9.4.2.127.10) as follows (***

A DMG STA in the role of AP sets the DMG location supporting APs in the area field to 1 to indicate that APs providing location services using DMG are in the vicinity of the AP STA and sets it to 0 otherwise. Definition of vicinity is implementation dependent. The AP may be capable of providing information about those DMG APs. The subfield is reserved if the DMG STA is not in the role of AP.

***TGaz Editor: in Table 9-281a replace “PEDMG” with “EDMG”***

***TGaz Editor: in P63L3-16 replace”PEDMG” with “EDMG”***

***TGaz Editor: in 9-845—Neighbor Report Request frame Action field format, replace “PDMG/PEDMG” with “DMG”***

***TGaz Editor: Change the text in P87L14-19 as follows***

The Neighbor DMG Request field is optionally present. If present it contains a Measurement Request Element with Measurement Type field equal to Neighboring DMG/EDMG APs (see Table 9-100- Measurement type definitions for measurement requests). The element indicates a request for Neighbor Report Elements containing information about neighboring APs supporting DMG location services. The Enable bit in the Measurement Request Mode field within the Measurement Request element is set to 0.

***TGaz Editor in table 9-402 (P97) change “DMG/EDMG” to “DMG”***

***TGaz Editor change the text in P104L34-50 (11.10.10.2) as follows:***

To request a list of neighboring APs that support DMG location services, the STA shall transmit a Neighbor Report Request frame that includes a Neighbor DMG/EDMG APs field with Measurement Request element with the value of its Measurement Type field equal to Neighboring DMG/EDMG APs. A STA shall not send this type of request to an AP if the AP has set the DMG location supporting APs information field to 0 in the Extended Capabilities element that the STA has received. The Neighbor Report Request frame shall include an SSID element with the SSID set to wildcard SSID.

***TGaz Editor: change the text in P105L4-9 (11.10.10.3) as follows:***

An AP that has set the DMG location supporting APs information field to 1 in the Extended Capabilities element that receives a Neighbor Report Request frame that includes a Measurement Request element with value of its Measurement Type field equal to Neighboring DMG/EDMG APs shall respond with a Neighbor Report Measurement frame with a list of Neighbor Report elements of neighboring DMG/EDMG APs supporting location services. Per each DMG/EDMG AP, the Neighbor Report element shall include a Measurement Report subelement with the

Discussion:

The following deletion is needed because legacy FTM can be used with DMG and EDMG devices

***TGaz Editor: In P115L33-35 Delete the following text as follows:***

***TGaz Editor: in subclause 11.22.6.3.6 replace all instances of “PDMG/PEDMG” with “DMG”***

***TGaz Editor: in subclause 11.22.6.3.7 replace all instances of “PEDMG” with “EDMG”***

***TGaz Editor: change the title of 11.22.6.3.7 from “***Direction measurement negotiation for PDMG/PEDMG STAs” to “LOS assessment negotioation for EDMG STAs”

***TGaz Editor: in the title of 11.22.6.4.2.1 repalce “PDMG/PEDMG” with “DMG”***

***TGaz Editor: delete the text in 11.22.6.4.2.1 as follows:***

***TGaz Editor: in 11.22.6.4.1 replace “PDMG/PEDMG” with “DMG” throughout the subclause.***

***TGaz Editor: in 11.22.6.4.1 replace “PEDMG” with “EDMG” throughout the subclause***

***TGaz Editor: in 11.22.6.4.2.1.2 replace “PDMG/PEDMG” with “DMG” throughout the subclause.***

***TGaz Editor: in 11.22.6.4.2.1.4 replace “PEDMG” with “PDMG” throughout the subclause (including title”***

***TGaz Editor: in P126L19 replace “PDMG/PEDGM” with “DMG”***

***TGaz Editor: in P127L3 replace “PEDMG” with “EDMG”***

***TGaz Editor: in* 11.22.6.4.2.1.6 *replace “PEDMG” with “EDMG” throughout the subclause***

***TGaz Editor: in 12.2.1 replace “PEDMG” with “EDMG” throughout the subclause***

***TGaz Editor: in P201L11 replace “PEDMG” with “EDMG”***

***TGaz Editor: in P202L1 (4th row, 3rd column) replace “PEDMG” with “EDMG”***

***TGaz Editor: in P202L6 replace “PEDMG” with “PDMG”***

***TGaz Editor: in P204L9 replace “PEDMG” with “PDMG”***

***TGaz Editor: in subclause 29.9, replace “PEDMG” with “PDMG” throughout is the subclause and its subclauses***

***TGaz Editor: in P110L26-46, P105L1-2 change the text as follows:***

A DMG STA, that have set to 1 either the Fine Timing Measurement Responder or the Fine Timing Measurement Responder subfields of the DMG Fine Timing and Range Measurement Capability Information field, shall set the non-TB Ranging Responder, TB Ranging Responder, Passive Location Ranging Responder Measurement Support and Passive Location Ranging Initiator Measurement Support fields of the Extended Capabilities element to 0. A DMG STA that additionally supports Direction Measurement shall include a DMG Direction Measurement Capabilities field in the DMG Capabilities element and set at least (#**1434**, #**1437**) one of the first 4 subfields (AOA TX Capability, AOA RX Capability, AOD TX Capability, AOD RX Capability) of this field to 1

An EDMG STA that have set to 1 either the Fine Timing Measurement Responder or the the Fine Timing Measurement Responder subfields of the DMG Fine Timing and Range Measurement Capability Information field may set one or more of the following fields to 1:

* The First Path Training Supported field of the Beamforming Capability subelement of the EDMG capabilities element.
* The LOS Assesment TX or LOS Assesment RX subfield of the DMG Direction measurement Capabillites field of the DMG capabilities element
* The Secure ToF supported field of the Beamforming Capability subelement of the EDMG capabilities element.
* EDMG OFDM Range Measurement field of the Beamforming Capabilities subelement to 1 if it supports ranging based on EDMG OFDM PPDUs.

(#1435) An EDMG STA that additionally supports Direction Measurement shall include a DMG Direction Measurement Capabilities field in the DMG Capabilities element and set at least (#**1434**, #**1437**) one of the first 4 subfields (AOA TX Capability, AOA RX Capability, AOD TX Capability, AOD RX Capability) of this field to 1.

***TGaz Editor: in P22L27 change the text as follows:***

DMG, security parameters can be negotiated to ensure that the measurement

**References:**

1. P802.11az/D1.5
2. IEEE P802.11ay/D5.0
3. IEEE P802.11-REVmd/D3.0