IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CC40 DMG clause 11 CIDs part 1 | | | | |
| Date: 2022-06-13 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Assaf Kasher | Qualcomm |  |  | assaf.kasher@gmail.com |
|  |  |  |  |  |

Abstract

This document proposes resolution to some CC40 information elements CIDs

CIDs are 763, 366, 361, 448, 357, 358, 359, 360, 362, 363, 364, 869, 450, 451, 870, 871, 872

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 763 | 11.21.18.6.2 | 69.62 | Suggest deleting the word 'will' from th sentence | As per comment | Accept |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 366 | 11.21.20.3 | 82.34 | 11.21.20.3 DMG measurement setup. Lack of detailed rules | Provide detailed rules on how to configure the DMG sensing instances, the DMG sensing bursts, and reporting specific for each type of the DMG sensing | Revise:  TGbf Editor perform changes specified in  <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |
| 361 | 11.21.20.3.1 | 83.32 | The paragraph that starts with "The sensing initiator shall set the Num TX Beams field ... " does not provide any definition of the measurement setup. The sentences with "shall" in this paragraph repeats the definition of the fields in 9.4.2.322 (DMG Sensing Measurement Setup element) and are therefore meaningless. On the other side is not defined how to configure the schedule parameters Number TX Beams Per Instance and Repeat Per Instance. | Define how to configure the DMG sensing instance and DMG sensing burst. The definition shall enable meeting specific requirements such as coverage of the TX and RX antennas and repetitiveness required for the Doppler shift measurement. | Revise:  TGbf Editor perform changes specified in  <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Change the text in P83L44 as follows:***

The DMG Sensing Scheduling **(#364)** subelement contains the scheduling of the measurement as proposed by the sensing initiator. The initiator shall set the Start of Burst field to the time of the start of the burst in TSF units. The initiator shall set the Intra Burst Interval field to the time between the start of scussessive intances in a burst. The initiator shall set the Inter Burst Interval field to the time between the start of successive bursts. The initiator shall set the Number of Tx Beams per Instance field to the number of Tx AWV patterns that will used in each instance. The initiator shall set the Repeat per Instance field to the number of times the transmitter will go through the Number of Tx Beams per Instance inside the instance (see e.g., 11.21.20.5.3 Bistatic DMG sensing instance). **(#366)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 448 | 11.21.20.3.1 | 82.40 | The subclause is written in a correct order. It is very hard to find the actuall process of what is the measurement setup, as it is hidden between many rules. | submission will be provided | Revise:  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |
| 357 | 11.21.20.3.1 | 82.63 | "The types of the measurement results are defined in TBD (DMG Measurement Report element), ..." Provide the references | Replace with "The types of the measurement results are defined in 9.4.2.322 (DMG Sensing Measurement Setup element), 9.4.2.325 (DMG Sensing Report Control element), 9.4.2.326 (DMG Sensing Report element), 9.4.2.327 (BRP Sensing element), ..." | Revise,  The text is deleted, replaced by the text changes proposed in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Change the text in P82L39-55***

The DMG measurement setup is a procedure that allows a sensing initiator and a sensing responder to exchange and agree on operational parameters associated with DMG sensing bursts and DMG sensing instances. The operational parameters may include intra-burst and inter-burst schedule, number of instances per burst, roles of sensing initiator and sensing responder, DMG sensing type, DMG measurement report types, and other parameters. The set of the operational parameters agreed between the sensing initiator and the sensing responder is labeled with the DMG Measurement Setup ID. The DMG measurement setup procedure is optional.

The sensing initiator and responder may need to perform DMG beamforming training before the DMG measurement setup procedure.

***TGbf Editor: Delete the text in P82L57-65***

***TGbf Editor: Insert the following text after P83L22***

The initiator shall set the Report Type field to type of report to be used in the measurement if feedback is provided, see Table 9-401v—Report Type subfield definition.

***TGbf Editor: Move the text in P83L1-6 to the end of the subclause.***

***TGbf Editor: delete the text in P83L8-10***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 358 | 11.21.20.3.1 | 83.13 | "They may exchange DMG positioning results such as ranging, AOA, and AOD. They may also exchange LCI and civic location." References are required | Provide the references | Revise:  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

Discussion:

The actuall exchange is described in P83.41-42 and P83L65. What needs to be described is only the issue of performing ranging before the measurement setup.

***TGbf Editor: Change the text in P83L12-15 as follows:***

The sensing initiator and the sensing responder may perform an FTM procedure (11.21.6 Fine Timing Measurement (FTM) procedure) to obtain the distance between them and their relative orientation prior to the DMG Measurement Setup procedure.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 359 | 11.21.20.3.1 | 83.26 | "The sensing initiator shall not request a sensing type that the sensing responder has not indicated it is capable of." Provide reference | Append to the sentence "9.4.2.319 (DMG Sensing Capabilities element)" | Revise:  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Change the text in P83L25-27***

the sensing type that will be used in the measurement. The sensing initiator shall not request a sensing type that the sensing responder has not indicated it is capable of in the DMG Sensing Capabilities element (see 9.4.2.319 DMG Sensing Capabilities Element) **(#359)**. For sensing type of bistatic, the RX Initiator sub-

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 360 | 11.21.20.3.1 | 83.27 | "For sensing type of bistatic, the RX Initiator subfield is set to 1 to indicate that the sensing initiator is the sensing receiver in the bistatic measurements. It is set to 0 if the sensing initiator is the sensing transmitter in the bistatic measurements." The rule is bistatic specific and should appear in 11.21.20.3.3 (Bistatic and coordinated bistatic) | Remove the text on page 83. Append the following text to 11.21.20.3.3 (Bistatic and coordinated bistatic) "The RX Initiator subfield in the Measurement Setup Control field of the DMG Sensing Measurement Setup element (9.4.2.322) shall be set to 1 to indicate that the sensing initiator is the sensing receiver. It shall be set to 0 to indicate that the sensing initiator is the sensing transmitter." | Reject  The 11.21.20.3.3. subclause is removed because it is not needed. The text shall remain in its place. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 362 | 11.21.20.3.1 | 83.32 | The paragraph that starts with "The sensing initiator shall set the Num TX Beams field ... " provides rules on configuring parameters/attributes indicated in the DMG Sensing Measurement Setup element and used in the DMG sensing instances. Part of the parameters may be limited by the values advertised in the DMG sensing capabilities. The relation between the parameters presented in the DMG sensing capabilities of the TX/RX and in the DMG Sensing Measurement Setup element is not defined. See for example Maximum Number of TX Directions. | Define the relation between the parameters presented in the DMG sensing capabilities of the TX/RX and in the DMG Sensing Measurement Setup element. | Reject:  The text in P83L37-39 clearly states that: “Each beam index in the TX Beam List and RX Beam List is an index into the list of beams the sensing transmitter and sensing  receiver published in their Sensing Beam Descriptor elements for transmit and receive, respectively.” |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 363 | 11.21.20.3.1 | 83.39 | Wrong name of the element "Sensing Beam Descriptor". It should be "DMG Sensing Beam Description" | Replace in all appearances of the error by "DMG Sensing Beam Description element (9.4.2.320)" | Revise:  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Change the text in P84L28 as follows:***

Published in their DMG Sensing Beam Description elements for TX and RX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 364 | 11.21.20.3.1 | 83.44 | "The Schedule subelement contains the scheduling of the measurement as proposed by the sensing initiator." Wrong subelement name. | Replace in all appearances with "DMG Sensing Scheduling" | Revise:  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Change the text in P83L60 as follows:***

the DMG Sensing Scheduling subelement included in the DMG Sensing Measurement Setup element. It shall set the Status

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 869 | 11.21.20.3.2 | 84.26 | The word will is deprecated and shall not be used when stating madatory requirements; will is only used in statements of fact (2021 IEEE SA Standards Style Manual - Section 9) | Change text to: "The Transmit Beam Index axis represents the Beam Index used by the STA to transmit and receive the monostatic sensing PPDU and the Receive Beam Index axis shall not be present." | Revise:  (The text requires significant changes)  TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0947-02-00bf-CC40-DMG-information-elements-CIDs.docx> |
| 450 | 11.21.20.3.3 | 84.37 | The requirements specified in this subclause are not related to session setup, they should go somewhere else. | move the requirements somewhere else. | TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |
| 451 | 11.21.20.3.4 | 84.54 | The requirements specified in this subclause on instances do not belong in session setup, they should go into instances | move the requirements to instances clause | TGbf Editor perform changes specified in <https://mentor.ieee.org/802.11/dcn/22/11-22-0966-00-00bf-CC40-DMG-clasue-11-CIDs-part-1> |

***TGbf Editor: Delete subclauses: 11.21.20.3.2 Monostatic and coordinated monostatic, 11.21.20.3.3 Bistatic and coordinated bistatic and 11.21.20.3.4 Multistatic.***

***TGbf Editor: Delete subclauses*** ***11.21.30.3.1 General heading, making the text that follows part of 11.21.30.3***

***TGbf Editor: Change the text in P86L44-46 as follows:***

DMG sensing instances of measurement whose Sensing Type subfield is set to Bi-Static are bistatic DMG sensing instances. Only a single transmitting STA and a single receiving STA participate in a bistatic DMG sensing instance. The roles of the initiator (transmitter vs. reciever) and responder are set by the RX Initiator subfield of the Measurement Setup Control field of the DMG Sensing Measurement Setup element sent by the transmitter. These roles apply to all instances of the same measurment.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 870 | 11.21.20.5.3 | 87.07 | The word will is deprecated and shall not be used when stating madatory requirements; will is only used in statements of fact (2021 IEEE SA Standards Style Manual - Section 9) | Change text to: "The sensing initiator shall go through the Num TX Beams Per Instance TX beams. If the Repeat per Instance field of the Scheduling subelement () is greater than 1, the sensing initiator shall cover the Num TX Beams Per Instance TX Beams in () instance times, going to the first one after the last one." | Accept |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 871 | 11.21.20.5.5a | 88.14 | The word will is deprecated and shall not be used when stating madatory requirements; will is only used in statements of fact (2021 IEEE SA Standards Style Manual - Section 9) | Change text to: "EDMG Multistatic Sensing PPDUs shall be addressed to the sensing responder that is assigned the value of 0 in the STA Multistatic ID." | Accept |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 872 | 11.21.20.5.5b | 88.42 | The word will is deprecated and shall not be used when stating madatory requirements; will is only used in statements of fact (2021 IEEE SA Standards Style Manual - Section 9) | Change text to: "All the EDMG Multistatic Sensing PPDUs in a multistatic EDMG sensing instance shall have the same PPDU length and TRN field format." | Accept |

**Appendix I**

This appendix shows how subclause 11.21.20.3 will look after the changes proposed in comment resolution in this document.

**11.21.20.3 DMG measurement setup**

The DMG measurement setup is a procedure that allows a sensing initiator and a sensing responder to exchange and agree on operational parameters associated with DMG sensing bursts and DMG sensing instances. The operational parameters may include intra-burst and inter-burst schedule, number of instances per burst, roles of sensing initiator and sensing responder, DMG sensing type, DMG measurement report types, and other parameters. The set of the operational parameters agreed between the sensing initiator and the sensing responder is labeled with the DMG Measurement Setup ID. The DMG measurement setup procedure is optional.

The sensing initiator and responder may need to perform DMG beamforming training before the DMG measurement setup procedure.

The sensing initiator and the sensing responder may perform an FTM procedure (11.21.6.1 Fine Timing Measurement (FTM) procedure) to obtain the distance between them and their relative orientation prior to the DMG Measurement Setup exchange.

A DMG Sensing Measurement setup starts with the sensing initiator sending a Sensing Measurement Setup Request frame containing a DMG Sensing Measurement Setup element to the sensing responder.

The sensing initiator shall set the Measurement Setup ID field in the DMG Sensing Measurement Setup element to a unique value identifying the measurement.

In the DMG Sensing Measurement Setup element, the sensing initiator shall set the Sensing Type subfield to the sensing type that will be used in the measurement. The sensing initiator shall not request a sensing type that the sensing responder has not indicated it is capable of in the DMG Sensing Capabilities element (see 9.4.2.319 DMG Sensing Capabilities Element) **(#359)**. For sensing type of bistatic, the RX Initiator subfield is set to 1 to indicate that the sensing initiator is the sensing receiver in the bistatic measurements. It is set to 0 if the sensing initiator is the sensing transmitter in the bistatic measurements.

The sensing initiator shall set the beam list in the Tx Beam List subelement to the list of beams that are used by the transmitter during the measurement and the beam list in the Rx Beam List subelement to the lists of beams that are used by the receiver during the measurement. **(#333)** Each beam index in the TX Beam List and RX Beam List is an index into the list of beams the sensing transmitter and sensing receiver published in their DMG **(#363)** Sensing Beam Description elements for transmit and receive, respectively. If the Sensing Type subfield is set to Coordinated Monostatic, The Rx Beam List subelement is not present. **(#869)**

If present, the Peer Orientation field contains the azimuth, elevation, and range of the sensing responder as measured by the sensing initiator. If present, the LCI field contains the location of the sensing initiator.

The DMG Sensing Scheduling **(#364)** subelement contains the scheduling of the measurement as proposed by the sensing initiator. The initiator shall set the Start of Burst field to the time of the start of the burst in TSF units. The initiator shall set the Inter Burst Interval field to the time between the start of scussessive intances in a burst. The initiator shall set the Intral Burst Interval field to the time between the start of successive bursts. The initiator shall set the Number of Tx Beams per Instance field to the number of Tx AWV patterns that will used in each interval. The initiator shall set the Repeat per Instance field to the number of times the transmitter will go through the Number of Tx Beams per Instance inside the instance (see e.g., 11.21.20.5.3 Bistatic DMG sensing instance). **(#366)**

After receiving a Sensing Measurement Setup frame with a DMG Sensing Measurement Setup element a DMG STA responds with a Sensing Measurement Response frame containing a DMG Measurement Setup Element.

The sensing responder shall set the Measurement Setup ID field in the DMG Sensing Measurement Setup

element to the value set in this field in the DMG Sensing Measurement Setup element sent by the sensing

initiator.

In the DMG Sensing Measurement Setup element, the sensing responder shall the set the Status Code field to SUCCESS if it accepts the Measurement Setup Request. It shall set the Status Code to

REJECT\_WITH\_SCHEDULE if it rejects the request but will accept with the schedule that is included in

the DMG Sensing Scheduling subelement included in the DMG Sensing Measurement Setup element. It shall set the Status Code field to REFUSED or REFUSED\_REASON\_UNSPECIFIED if it rejects the request.

The sensing responder shall set Sensing Type RX Initiator subfield to the same value that was in the Sensing Measurement Setup frame. If present, the Peer Orientation field contains the azimuth and elevation of the sensing initiator as measured by sensing responder. If present, the LCI field contains the location of the sensing initiator.

If the sensing responder indicated REJECT\_WITH\_SCHEDULE, the Scheduling subelement indicates the proposed schedule from the sensing responder.

The sensing initiator requests DMG measurement setup separately with each sensing responder. The set of the operational parameters established upon the negotiation is identified by the DMG Measurement Setup ID. The same DMG Measurement Setup ID may be asserted to the agreement with different sensing responders if the sensing initiator schedules to address the sensing responders in the same DMG measurement instance.

**References: Draft P802.11bf\_D0.1**