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| DMG sensing procedure part two |
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Abstract

Presentation of the DMG sensing procedure

## 7.2 DMG sensing (SENS) procedure

### **7.2.1 Overview**

In addition to 11-21-2015-02-00bf-DMG-Sensing-procedure

The behavior of each type of DMG sensing is defined separately

The DMG sensing procedure defines the behavior of a single initiator with one or more responders.

**7.2.2 DMG Sensing session setup**

In a DMG sensing session setup of a DMG sensing procedure the Initiator and the Responder exchange DMG sensing capabilities. The capabilities may include the types of DMG sensing and the roles the STA may play per each of the supported DMG sensing types.

To coordinate more than one responder, the Initiator of the DMG sensing shall be an AP/PCP STA.

The Initiator may be capable of the roles of the DMG sensing transmitter, the DMG sensing receiver, the DMG sensing transmitter and receiver, or none of them.

A DMG sensing Responder may be capable of one or more of the following roles: DMG sensing receiver, DMG sensing transmitter, and DMG sensing transmitter and receiver.

An Initiator of the DMG sensing type monostatic and coordinated monostatic shall be capable of the DMG Sensing transmitter and receiver roles or neither of them.

A Responder of the DMG sensing type monostatic and coordinated monostatic shall be capable of the DMG sensing transmitter and receiver roles.

An Initiator of the DMG sensing type bistatic and coordinated bistatic shall be capable of the DMG sensing transmitter and/or the DMG sensing receiver role.

A Responder of the DMG sensing type bistatic and coordinated bistatic shall be capable of the DMG sensing transmitter and/or the DMG sensing receiver role.

The Initiator of the DMG sensing type multistatic shall be capable of the DMG sensing transmitter and/or the DMG sensing receiver role.

The Responder of the DMG sensing type multistatic shall be capable of the DMG sensing transmitter and/or the DMG sensing receiver role.

### **7.2.3 DMG measurement setup**

**7.2.3.1 General**

The DMG measurement setup may require an accomplishment of beamforming training between the Initiator and the Responder(s) in advance.

An optional negotiation process in the DMG measurement setup is defined that allows for a sensing Initiator and a sensing responder to exchange and agree on operational attributes associated with a DMG sensing bursts and DMG sensing instances. The operational attributes may include intra-burst and inter-burst schedule, number of instances per burst, Initiator’s and Responder’s roles, DMG sensing type, DMG measurement report types, and other parameters.

More than one type of DMG sensing measurement results may be defined. The type of measurement result reported in a DMG sensing procedure shall be decided by its Initiator per Responder capabilities per DMG sensing types.

The Initiator requests the DMG measurement setup separately with each responder. The set of the operational attributes and 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 responders typically if the initiator schedules to address the responders in the same DMG measurement instances.

During a DMG measurement setup, the role(s) of the sensing initiator and responder shall be determined as defined per DMG sensing types (7.2.2)

The Initiator and the Responder may proceed with the DMG positioning during a DMG measurement setup. They may exchange the DMG positioning results: the ranging, the AOA, and the AOD. They may also exchange the LCI and the civic location.

**7.2.3.2 Setup for Monostatic and Coordinated Monostatic DMG sensing type**

The Initiator of the Monostatic DMG sensing measurement may be a STA not capable of the Monostatic DMG sensing

**7.2.3.3 Setup for Bistatic and Coordinated Bistatic DMG sensing type**

The Initiator of the Bistatic DMG sensing measurement shall be capable of the Bistatic DMG sensing.

In DMG measurement instances of the DMG sensing procedure of sensing type bistatic, the initiator shall interact with one responder, and no more.

In DMG measurement instances belonging to the same DMG Measurement setup ID, the responder shall be in the DMG sensing receiver role if the initiator is in the DMG sensing transmitter role and vice versa.

**7.2.3.4 Setup for Multistatic measurement DMG sensing type**

The Initiator of a Multistatic DMG sensing measurement shall be capable of the Multistatic DMG sensing.

In DMG measurement instances of the DMG sensing procedure of DMG sensing type multistatic, the initiator may interact with one or more responders.

In DMG measurement instances belonging to the same DMG Measurement setup ID, all responder(s) shall be in the DMG sensing receiver role if the initiator is in the DMG sensing transmitter role.

In DMG measurement instances belonging to the same DMG Measurement setup ID, all responder(s) shall be in the DMG sensing transmitter role if the DMG sensing initiator is in the DMG sensing receiver role.

**7.2.4 DMG sensing burst**

A DMG burst may be defined to include more than one sensing measurement instance. Each instance is limited by the TXOP Limit.

A DMG burst is identified with the DMG burst ID.

The DMG burst parameters defined at the measurement setup shall be identified by the DMG Measurement Setup ID.

A specific DMG burst may belong to not more than one DMG Measurement Setup ID.

All DMG sensing instances in the DMG burst shall belong to the same DMG Measurement Setup ID.

The responder may aggregate the reports and report once per the DMG burst if the aggregated reporting is set in the DMG Measurement setup.

**7.2.5 DMG sensing instance**

**7.2.5.1 General**

A DMG sensing instance is limited to one TXOP.

A DMG sensing instance belongs to one DMG measurement setup ID.

A DMG sensing instance includes the following phases: initiation phase, sounding phase, and reporting phase. The sounding phase is mandatory, and the initiation and reporting phases are optional.

DMG measurement instances of the DMG sensing types Monostatic and the Bistatic may not contain the initiation phase.

DMG measurement instances of the DNG sensing types coordinated Monostatic, coordinated Bistatic, and Multistatic shall contain the initiation phase.

The reporting phase is mandatory if the Responder is in the DMG sensing receiver role and in the DMG sensing transmitter and receiving role.

A DMG sensing instance is identified with the DMG sensing instance number. The DMG sensing instance number shall be sequential in increasing order.

The DMG sensing instance number shall be unique in range (e.g. 0-31, the number is TBD).

The DMG sensing instance may belong to the DMG burst. The DMG sensing instance number shall be unique per the DMG Burst ID.

**7.2.5.2 Coordinated Monostatic instances**

**7.2.5.2.1 Initiation**

In a Coordinated Monostatic instance of one or more responders the following rules shall apply:

- The number of responders STAs in each Instance of the same DMG Measurement setup ID may be different

- The initiator shall send the Coordinated Monostatic instance request frame to each responder it invites to participate in the sensing instance

- The responder shall not respond with the Coordinated Monostatic instance response frame to the initiator later than SIFS time after the request

- The responder that responded to the Initiator shall proceed with the Monostatic sensing.

- The order of sounding is indicated in the Coordinated Monostatic instance request frame

- The format of the request and the response frames is TBD

**7.2.5.2.2 Sounding**

The RA shall be set equal to the TA in the PSDU contained in the Monostatic PPDU (name of this PPDU is TBD)

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**7.2.5.2.3 Reporting**

If the responses are configured to happen during the DMG measurement instance, each responder shall respond in no longer than SIFS time after the Monostatic PPDU, and

If the polled responses are configured, each responder shall respond in no longer than SIFS time after the polling by the initiator.

**7.2.5.3 Bistatic and Coordinated Bistatic instance**

**7.2.5.3.1 Initiation**

In the Coordinated Bistatic instance of one or more responders the following rules shall apply:

- Number of the responder STA in each Instance of the same DMG Measurement setup ID may be different

- The initiator shall send the Bistatic Instance request frame to each responder it invites to participate in the sensing instance

- The responder shall not respond with the Bistatic Instance response frame to the initiator later than in SIFS time

- The responder that responded to the Initiator shall remain active to receive the BRP PPDU.

- The order of sounding is indicated in the Bistatic instance request frame

- The format of the request and the response frames is TBD

see 11-21-1799

**7.2.5.3.2 Sounding**

see 11-21-1799

**7.2.5.3.3 Reporting**

In a measurement instance, the responses of the responder in the DMG sensing receiver role to the initiator in the DMG sensing transmitter role may contain no more than one Measurement report

see 11-21-1799

**7.2.5.4 Multistatic instance**

**7.2.5.4.1 Initiation**

In a Multistatic instance of one or more responders the following rules shall apply:

- Number of the responder STA in each Instance of the same DMG Measurement setup ID may be different

- The initiator shall send the Multistatic Instance request frame to each responder it invites to participate in the sensing instance

- The responder shall not respond with the Multistatic Instance response frame to the initiator later than in SIFS time

- The responder that responded to the Initiator shall remain active to receive the Multistatic PPDU (name of this PPDU is TBD)

- The format of the request and the response frames is TBD

see 11-21-1799

**7.2.5.4.2 Sounding**

see 11-21-1799

**7.2.5.4.3 Reporting**

If the responses are configured to happen during the DMG measurement instance, each responder shall respond in no longer than SIFS time after the polling by the initiator.

see 11-21-1799

**7.2.6 Passive DMG sensing**

see 11-22-0002

**7.2.7 DMG Sensing by proxy (DMG SBP) procedure**

DMG Sensing by Proxy (DMG SBP) is the DMG variant of the SBP procedure. The DMG SBP allows a non-AP and AP STA that is not the initiator to request the initiator to perform the measurement and report the results. The initiator shall provide the DMG SBP service.

**Straw Poll**

Do you agree to append the text to the SFD?

The text of the referred documents is not part of the submitted text.