IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PDT DMG sensing: monostatic configurations | | | | |
| Date: 2022-01-24 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Rui Du | Huawei |  |  | ray.du@huawei.com |
| Mengshi Hu | Huawei |  |  |  |
| Naren | Huawei |  |  |  |
| Yan Xin | Huawei |  |  |  |

Abstract

This submission proposes the draft text for the DMG sensing: monostatic configurations

R0: initial version.

R1: revised based on 22/0243r6, an example is added.

The following Motion is related to this PDT:

[Motion 40] (Motion passed)

**Move to add the following to 11bf SFD:**

* DMG/EDMG-based WLAN sensing supports both monostatic sensing and monostatic sensing with coordination configurations.
* In the monostatic sensing with coordination configuration, the transmissions of one or more devices that perform monostatic sensing are coordinated by a PCP/AP.

***Proposed draft text:***

***TGbe editor: Insert the following part of monostatic sensing to 7.3.1 Overiew***

**Notes: The text in black comes from the contribution 22/0243r6. New paragraphs are added in revision mode.**

## 11.21.18.x DMG sensing (SENS) procedure

### 11.21.18.x.1 Overview (Motion 55, 21/2015r4)

DMG sensing types include monostatic, bistatic, multistatic, monostatic sensing with coordination, bistatic sensing with coordination, and passive sensing

…



**Figure 11-x7: DMG sensing instance of the coordinated monostatic type with PCP/AP as sensing initiator and two monostatic sensing devices as sensing responders who perform sensing in parallel.**

Figure 11-x7 illustrates another example of DMG coordinated monostatic sensing instance with the not-sensing capable Initiator and two Responders STA A and STA B.

Similary, the example starts with the initiation phase. The handshake between the initiator and the responder provides the responders with the order of the sounding (in parallel) and reporting. In its sounding phase, the responder STA (A and B) transmits the PPDU and receives the reflected signal in parallel. In the immediately following reporting phase it reports with the results that are labeled with the DMG measurement setup ID=1, DMG sensing burst ID=1 and the DMG sensing instance Nmb=1 to the Initiator.

### 11.21.18.x.2 DMG sensing session setup (Motion 56, 22/0031r0)

In a DMG sensing session setup of a DMG sensing procedure, the sensing initiator and the sensing responder exchange DMG sensing capabilities. The capabilities may include the types of DMG sensing and the roles the STA may assume for each of the supported DMG sensing types.

…

### 11.21.18.x.3 DMG measurement setup (Motion 56, 22/0031r0)

**11.21.18.x.3.1 General**

DMG measurement setup may require an accomplishment of beamforming training between the sensing initiator and the sensing responder(s) in advance. (10.42, 11.36)

…

**11.21.18.x.3.2 Setup for monostatic and coordinated monostatic DMG sensing type**

The sensing initiator of a coordinated monostatic DMG sensing measurement may be a STA not capable of monostatic DMG sensing.

…

**11.21.18.x.3.3 Setup for bistatic and coordinated bistatic DMG sensing type**

The sensing initiator of a bistatic DMG sensing measurement shall be capable of bistatic DMG sensing.

…

**11.21.18.x.3.4 Setup for multistatic measurement DMG sensing type**

The sensing initiator of a multistatic DMG sensing measurement shall be capable of multistatic DMG sensing.

…

### 11.21.18.x.4 DMG sensing burst (Motion 56, 22/0031r0)

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

…

### 11.21.18.x.5 DMG sensing instance (Motion 56, 22/0031r0)

**11.21.18.x.5.1 General**

…

**11.21.18.x.5.2 Coordinated monostatic instance**

…

*11.21.18.x.5.2.1 Initiation*

In a coordinated monostatic instance of one or more sensing responders the following rules shall apply:

* The number of sensing responders in each instance of the same DMG Measurement Setup ID may be different
* The sensing initiator shall send a Coordinated Monostatic Instance Request frame to each sensing responder it requests to participate in the instance
* The sensing responder shall not respond with the Coordinated Monostatic Instance Response frame to the sensing initiator later than SIFS time after the request
* The sensing responder that responded to the sensing initiator shall proceed with monostatic sensing
* ~~The order of sounding is indicated in the Coordinated Monostatic Instance Request frame~~
* The order of sounding is indicated in the Coordinated Monostatic Instance Request frame, the sounding could be performed sequentialy or simultaneously. The format of the Coordinated Monostatic Instance Request frame and the Coordinated Monostatic Instance Response frame is TBD

*11.21.18.x.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).

*11.21.18.x.5.2.3 Reporting*

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