IEEE P802.11
Wireless LANs

|  |
| --- |
| LB272 - LB272 Comment resolutions to CID1764 |
| Date: 2023-07-11 |
| Author: |
| Name | Affiliation | Address | Phone | Email |
| Yan Xin | Huawei Technologies | Ottawa, Ontario |  | yan.xin@huawei.com |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

This submission includes the resolutions CID#1764

on Subclauses 28.9.4 and 11.55.3.6.2.3 in P802.11bf D1.0.

The baseline document is 802.11bf D1.2.

##### Revision history:

##### R0 – initial version

**CID: 1764**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CID | Clause | Page | Line | Comment | Proposed Change | Proposed resolution |
| 1764 | 11.55.3.6.2.3 | 210 | 13 | The draft text "The Sounding Duration of STA A and STA B may have different duration for different PPDU types or different Data Length." implies that for the case that more than one monostatic sounding PPDUs are transmitted by each responder during the sounding phase, those monostatic sounding PPDUs may not be fully aligned in time. How to maintain the orthogonality of sounding signals in the parallel mode? | Need to further consider the sounding signals for coordinated monstatic DMG sensing. | REVISEDTGbf Editor: please revise the text as suggested in 11-23/1247r0 |

*Discussion:*

*As specified in subclause 28.9.4 in 802.11bf D1.2, “As described in Annex AB, any DMG or EDMG PPDU may be used for monostatic sensing.”*

*Annex AB in P5710L30 of IEEE P802.11-REVme/D3.0 specifies: “By using the approach described in this Annex to implement radar function, coexistence with DMG and EDMG transmissions on the same channel is achieved due to the use of IEEE 802.11 EDCA medium access rules and DMG or EDMG PPDUs, which allow other STAs to determine the duration of a transmission.”*

*As described in 11.55.3.6.2.3 Parallel coordinated monostatic DMG sensing instance in 802.11bf D1.2 and as shown in Figure 11-74o as well, in the sounding phase of parallel coordinated monostatic DMG sensing, multiple sensing responders shall send more than one DMG monostatic sensing PPDU in parallel. If the DMG monostatic sensing PPDUs are transmitted on the same channel which may cause a collision. If this is the case, the responders may not correctly detect the preambles and the data fields and a collision in TRN fields and/or mis-aligned TRN fields deteriorate the orthogonality of TRN fields used by different responders. These will impact on the sensing performance.*

*In Subclause 11.55.3.6 (DMG sensing instance) of IEEE802.11bf D1.2, it is specifies that “A DMG sensing instance is limited to one TXOP or SP.” The TXOP or SP owner PCP/AP can allocate multiple channels for the duration of TXOP or SP.*

*In Subclause 10.41.5.1 Allocation of A-BFT in IEEE P802.11-REVme/D3.0, EDMG specifies that multiple A-BFT can be allocated over the primary channel and a secondary channel and can be transmitted by multiple non-AP (or non-PCP) STAs simultaneously.*

*The proposed resolution for CID #1764 is: to allow multiple sounding PPDUs used in the sound phase of parallel sounding mode in coordinated monostatic DMG sensing to be transmitted by different responders over different channels.*

TGbf editor: Please revise the caption of Figure 11-74n and the following two paragraphs in 802.11bf D1.2 as below.

**Figure 11-74n(a)—Coordinated monostatic DMG sensing instances in parallel sounding mode** with single-channel operation in the sounding phase.

Figure 11-74n(a) (Coordinated monostatic DMG sensing instances in parallel sounding mode with single-channel operation in the sounding phase) gives an example of two parallel coordinated monostatic DMG sensing instances. The PCP/AP is the sensing initiator and two non-AP STAs (STA A and STA B) are sensing responders. The SP is not used and the measurement results need to be reported. In the DMG sensing measurement session phase, STA A and STA B delivered the Sounding Duration 0a, Report Duration 0a, Sounding Duration 0b, and Report Duration 0b of the first instance to the sensing initiator by the DMG Sensing Instance Duration element within the DMG Sensing Measurement Response frames.

In Instance 1, in the initiation phase, the sensing initiator sends a DMG Sensing Request frame to STA A

(STA ID equal to 0) and receives a DMG Sensing Response frame from STA A. Then the sensing initiator sends a DMG Sensing Request frame to STA B (STA ID equal to 1) and receives a DMG Sensing Response frame from STA B. The DMG Sensing Request frames activate STA A and STA B to be ready to participate in the sounding and reporting phases. The DMG Sensing Response frames indicate to the sensing initiator the readiness of STA A and STA B, and include the Sounding Duration 1a, Report Duration 1a, Sounding Duration 1b, and Report Duration 1b of the Instance 2. Based on the STA ID field and the Num of STAs in Instance field within the received DMG Sensing Request frame, STA A infers that there is one remaining sensing responder to be initiated and estimates when the last DMG Sensing Response ends. In the first DMG Sensing Request frame transmitted by the sensing initiator, the Duration field is set according to Equation (11-10). The sensing initiator calculates it based on the Sounding Duration 0a, Report Duration 0a, Sounding Duration 0b, and Report Duration 0b fields delivered in the DMG Sensing Instance Duration element within the DMG Sensing Measurement Response frames. In the following sounding phase, STA A and STA B transmit DMG monostatic sensing PPDUs and receive the reflected signal in parallel over the same channel. The duration of the transmission of the DMG monostatic sensing PPDUs of STA A including the SBIFS is equal to the Sounding Duration 0a. The duration of the transmission of the DMG monostatic sensing PPDUs of STA B including the SBIFS is equal to the Sounding Duration 0b. The measurement in DMG monostatic sensing PPDUs covers the number of transmit AWVs indicated by the Number TX Beams Per Instance field and the times of repetition indicated by the Repeat Per Instance field within the DMG Sensing Scheduling subelement of the DMG Sensing Measurement Session element. The Sounding Duration of STA A and STA B may have different duration for different PPDU types or different Data Length. In the following reporting phase, after the largest Sounding Duration (Sounding Duration 0b) plus SIFS and BRPIFS from the end of the last DMG Sensing Response frame, the sensing initiator sends the first DMG Sensing Poll frame to STA A for the report and receives a DMG Sensing Measurement Report frame from STA A. Then the sensing initiator sends another DMG Sensing Poll frame to STA B for the report and receives a DMG Sensing Measurement Report frame from STA B. The duration of the transmission of the DMG Sensing Measurement Report frame of STA A is equal to the Report Duration 0a. The duration of the transmission of the DMG Sensing Measurement Report frame of STA B is equal to the Report Duration 0b.

TGbf editor: Please add the following Figure 11-71n(b) and the text to the end of subclause 11.55.3.6.2.3 Parallel coordinated monostatic DMG sensing instance in 802.11bf D1.2 as below.



Figure 11-74n(b) - Coordinated monostatic DMG sensing instances in parallel sounding mode with multi-channel operation in the sounding phase.

Figure 11-74n(b) (Coordinated monostatic DMG sensing instances in parallel sounding mode with multi-channel operation in the sounding phase) shows an example of two parallel coordinated monostatic DMG sensing instances, in which the PCP/AP is the sensing initiator and two non-PCP/AP STAs (STA A and STA B) are the sensing responders. In the DMG sensing measurement setup phase, in addition to the information exchanged between the initiator and the responders described above, for Coordinated monostatic DMG sensing instances in parallel sounding mode with wideband operation in a DMG sensing measurement session, the initiator may allocate the primary channel for monstatic sounding of STA A and indicate the operating channel to STA A for its transmission of sounding PPDU in the initiation phase of coordinated monostatic DMG sensing instance. Similarly, the initiator shall allocate an ajacent secondary channel for monstatic sounding of STA B and indicate the operating channel to STA B for its transmission of sounding PPDU in the initiation phase of coordinated monostatic DMG sensing instance. Duplications of DMG sensing request PPDU, DMG sensing response PPDU, DMG sensing polling PPDU and DMG sensing reporting PPDU should be transmitted on the primary channel and the adjacent secondary channel.

Channel bounding operation can be applied to a DMG sensing measurement session. The operating bounded channels in a DMG sensing measurement session for transmission of multiple sounding PPDUs in parallel should be reserved within a TXOP or SP.