IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB272 Comment Resolution for INSTANCE category | | | | |
| Date: 2023-03-26 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | Email |
| Ali Raissinia | Qualcomm Inc. |  |  | [alirezar@qti.qualcomm.com](mailto:alirezar@qti.qualcomm.com) |
| Chen Cheng | Intel |  |  | [cheng.chen@intel.com](mailto:cheng.chen@intel.com) |

Abstract

This document proposes resolution for CID 1041, 1284, 1296, 1771, 1931, 1949, 2048 and 2125.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clause** | **Page** | **Comment** | **Proposed Change** | **Resolution** |
| 1041 | 11.55.1.5.2.2 | 179.09 | What happens if an AP does not receive any CTS-to-self response from the polled STA(s) after sending a Sensing Polling Trigger frame? | Please specify how an AP proceeds in the case that the AP does not receive any CTS-to-self response from the polled STA(s) after sending a Sensing Polling Trigger frame. | Revise  Agree with the commentor in principle, see below for the revised changes.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 1284 | 11.55.1.5.2.2 | 179.11 | The sentence "if reporting is required, it shall proceed to the reporting phase aSIFS after the NDPA sounding and/or TF sounding phase" seems incorrect, in TF sounding the AP doesn't need any report. rephrase the sentence. | as in the comment | Reject  See explanation below under Discussion for CID1284.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 1296 | 11.55.1.5.2.2 | 179.31 | The current power save procedure of TB measurement instance lets the STAs that are assigned to be polled but haven't been polled enter power save mode when there is no more Sensing Polling Trigger frame. In this case, the STAs haven't been polled need to wait until the last Sensing Polling Trigger frame (More TF = 0). There is a better power save procedure that can provide more power save opportunities. | For better power save, AP can poll all the STAs that are assigned to be polled by the first Sensing Polling Trigger frame of each TXOP, then those STAs that are assigned to be polled but haven't been polled only stay awake for listening the Sensing Polling Trigger frame and can enter doze state until the end of the current TXOP. | Reject  See explanation below under Discussion for CID1296.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 1771 | 9.3.1.22.14 | 76.49 | Was there any thought put into the case where an AP would aggregate both sensing and ranging sessions into the same TB Tx-OP? Seems the polling and some of the sensing could be shared (?) | Consider backward compatibility of TF definitions such that pre-11bf STAs could possibly work in same setup sharing polling and/or UL/DL NDPs. | Reject  See explanation below under Discussion for CID1771.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 1931 | 11.55.1.5.2.1 | 176.29 | Currentl only AP can intiate a TB sensing session can only be initiated by the AP | A STA should be allowed to to initiate a TB sensing session setup with the AP. Please add this capability | Reject  See explanation below under Discussion for CID1931, 2048 and 2125.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 1949 | 11.55.1.5.3.1 | 185.25 | The text "It is applicable in scenarios where a non-AP STA is the sensing initiator and an AP is the sensing responder" is true, however the role of initiator in a non-TB measurement instance may also apply to an AP STA. References to "a non-AP STA may initiate ..." should be changed to "sensing initiator", since it may apply to either AP or non-AP STA. | Add the following text to the paragraph "The non-TB measurement instance may also be applicable to scenarios where an AP STA is the sensing initiator, and a non-AP sta is the sensing responder". Since initiator and responder roles can be taken by either AP or non-AP STA, either refer to "STA" or "initiator/responder". | Reject  See explanation below under Discussion for CID 1949.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 2048 | 11.55.1.5.2.1 | 176.29 | A TB sensing session can only be initiated by the AP, as mentioned in the following sentence: "It is applicable to scenarios where an AP is the sensing initiator, and one or more non-AP STAs are the sensing responders." Typcially, an AP will have a better view of the network activity and more efficient in doing channel access and combine sensing sessions when necessary from channel access perspective, leading to a more efficient implementation. It would make sense to allow use cases where non-AP STA is the initiator, to take advantage of this more efficient sensing procedure. | Allow a non-AP STA to initiate a TB sensing measurement instance with the AP. The measurement procedure can be same as the current TB sensing procedure. Please include a setup procedure (for example: as in a NTB measurement setup) using which, the non-AP STA can request the AP to setup a TB measurement instance with itself. | Reject  See explanation below under Discussion for CID1931, 2048 and 2125.  <https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category>.docx |
| 2125 | 11.55.1.5.2 | 176.24 | It might be beneficial to allow a STA to request for a TB sensing session - currently missing in the draft. Please define a mechanism to allow this STA flexibility | As in comment | Reject  See explanation below under Discussion for CID1931, 2048 and 2125.  [https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-01bf-LB272-comment-resolution-for-INSTANCE-category](https://mentor.ieee.org/802.11/dcn/21/11-23-0553-00-00bf-LB272-comment-resolution-for-INSTANCE-category).docx |

**Discussion for CID 1041:**

The commentor is correct to suggest adding a missing normative text for AP behavior when the non-AP STA does not send CTS2S in response to Sensing Poll Trigger frame.

TGbf editor, modify the sentence in P178L55-56 as following.

……other-wise, it shall not send a CTS-to-self to avoid resource allocation in this measurement instance in which case the AP shall not include the non-AP STA in this TB sensing measurement instance (CID1041).

**Discussion for CID 1284:**

The commenter incorrectly assumes that reporting is not included after TF sounding, see below for the cases:

Poll, NDPA sounding, Report (reporting required), see Figure 11-74e

Poll, TF sounding (reporting not required), see Figure 11-74e

Poll, NDPA sounding, TF sounding, Report (reporting required), see Figure 11-74f

**Discussion for CID 1296:**

The commenter is suggesting having implicit behavior by the fact that the non-AP STA is not included in the first Sensing Poll trigger frame hence should stay awake for a follow Sensing Poll trigger. The current specified protocol provides explicit indication using ‘More bit’ in the Sensing Poll trigger frame with broadcast RA to enable either staying awake or enter doze state which seems to be an improved solution over implicit. Additionally, it may be inappropriate for an AP to poll all non-AP STAs in the first Sensing Poll Trigger frame as suggested by the commenter because of at least couple of restrictions-

* There may not be enough RU resources to poll all non-AP STAs.
* AP may decide to poll non-AP STAs belonging to the ‘same’ measurement instance such as the first set being 160 MHz STAs followed by second set being the 80 MHz STAs, and so on.

**Discussion for CID 1771:**

The TB ranging measurement exchange requires sounding in both UL/DL directions and measurement feedback (LMR) is required to be sent by AP to non-AP STA. The TB sensing measurement instance does not always require two-way sounding and additionally feedback is not sent by AP and instead ‘optionally’ sent by non-AP STA. The differences create complexity for the AP to manage as a ‘common’ sequence supporting both ranging & sensing at the same time. The two sequences differ enough that it would be better to have them separated. One approach could be that AP can choose to use the same availability window where it can manage both sequences in any order it wishes. The second potential solution is when channel resperocity can be exploited so that with only ranging sequence the UL sounding can be used to measure both ToA while at the same time deliver CSI to the application layer, this doesn’t require new sequence and can be managed by the sensing initiator itself. Regardless, there is no need to have any changes to the 11bf amendment text.

**Discussion for CID1931, 2048 and 2125:**

The commenters are proposing to add TB sensing measurement instance for a non-AP STA as an initiator! As commenters are potentially aware the non-AP STA is not able to transmit “trigger frame’ (limitation of 11ax & 11be standard) which is essential for initiating TB sensing measurement instance. However, the non-AP STA as an initiator can delegate the operation to an AP and selectively include itself in the TB sensing measurement instance. This ‘delegation’ is already included in the 11bf specification under SBP procedure. Essentially, the feature already exists under SBP procedure with comprehensive flexibility to address various scenarios including addition of other sensing responders. A potential refinement is to move the SBP procedure and related text under WLAN sensing and redefine it as “TB sensing measurement instance initated by non-AP STA”.

**Discussion for CID1949:**

The commenter is suggesting adding the non-TB sensing measurement instance for AP as an intator. Currently, the spec includes the non-TB sensing measurement instance for non-AP STA as an initator.

Below are a few arguments against adding such a feature:

* The non-TB sensing measurement instance currently does not require any ‘availability window’ since the sequence is in control of non-AP STA therefore sequence can start ‘at any time’. If the sequence were to be in control of AP, then we would need availability window so that AP can proceed by ensuring that unassociated non-AP STA is available before sending the sequence, mimicking TB like sequence. One could argue that this proposed feature is better suited for associated non-AP STA but spec needs to provide a comprehensive solution.
* The non-TB sensing measurement instance is NOT always an optimal sequence such as for instance when only SR2SI NDP sounding is required the sequence includes SI2SR NDP regardless. In the TB sequence, AP can only do TF sounding (without polling) and obtain an SR2SI NDP and be more efficient.
* AP would need to support TB sensing measurement instance regardless as it enables MU operation, an SU operation is a minore subvariant hence no additional complexity of supporting two sequences.

**References:**

**[1] Draft P802.11bf\_D1.0**