IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB266 CR for CID 12488 | | | | |
| Date: 2022-11-02 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Jeongki Kim | Ofinno |  |  | jkim@ofinno.com |
|  |  |  |  |  |

Abstract

This submission proposes resolutions for the following CID for TGbe LB266:

• 12488

**Revisions:**

* Rev 0: Initial version of the document.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Clasue** | **Page/Line** | **Comment** | **Proposed Change** | **Resolution** |
| 12488 | 35.2.1.2.3 | 402.29 | In TXS procedure, allocated time resource is used by allocated STA. While the allocated STA is using the resource, the AP will not try to communicate with STAs, especially in TXS mode 2. During the time period that the allocated STA uses, unassigned STAs just set their NAV by MU-RTS TXS frame and are in awake state. It will consume the power of unassigned STAs unnecessarily. During the TXS allocated time period, if unassigned STA requires lower power consumption (due to lower battery level), the STA should be able to be in doze state during the allocated time. The AP should not transmit a frame to the lower power STA that is in doze state during the allocated time if the AP can send the frame (e.g., when STA return the remaining resource). Instead of it, AP can send a frame to other STA (e.g., awake STA or legacy STA). | Describe in the spec the power saving operation of unassigned STA during the allocated time period of TXS procedure. | Revised  Agree in principle with the comment.  In TXS procedure, an unassigned STA requiring lower power consumption may want to save its power during the time allocated for the other STA. In that sense, we need to define a method for the unassigned STA to save its power.    TGbe editor to make the changes shown in 11-22/2183r0 under all headings that include CID 12488 |

**Discussion:**

In UM MU procedure, because multiple STAs are able to transmit TB PPDUs after they receive a Trigger frame, there is a high possibility that a STA that is not assigned by the Trigger frame will receives a TB PPDU from one of multiples STAs. Therefore, the unassigned STA can easily detect the BSS color of the TB PPDU and enter the doze state until the end of the Intra-BSS TB PPDU.

In TXS procedure, AP can assign to one STA a time for TXS procedure and if the unassigned STA is hidden from the assigned STA, the unassigned STA will be in awake state during the allocated TXS time, especially in P2P case of TXS mode 2. It can waste the power consumption of the STA requiring lower power consumption.

In TXS procedure, the unassigned STA that requires the lower power consumption should be able to enter the doze state during the allocated TXS time. The AP should not transmit any frame to the unassigned STA during the allocated TXS time when the AP is available to transmit DL frame during the remaining time of allocated TXS time. Instead of the unassigned STA in doze state, AP can transmt a frame to other STA (e.g., legacy STA or awake STA) during the remaining time.

**Proposed texts:**

***TGbe editor: Change Figure 9-766 (Broadcast TWT Parameter Set field format) as follows: (#12485):***

* + - * 1. **EHT MAC Capabilities Information field**

The format of the EHT MAC Capabilities Information field is defined in [Figure 9-1002ae (EHT MAC](#bookmark182) [Capabilities Information field format)](#bookmark182).

B0 B1 B2 B3 B4

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| EPCS Priority Access Support(#13482) | EHT OM Control Support | Triggered TXOP Sharing Mode 1 Support | Triggered TXOP Sharing Mode 2 Support | Restricted TWT Support |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Bits: | 1 |  | 1 |  | 1 | 1 | 1 |
|  | B5 | B6 |  | B7 | B8 | B9 | B10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| SCS Traffic Description Support | Maximum MPDU Length | Maximum  A-MPDU Length Exponent Extension | EHT TRS Support | TXOP Return Support In TXOP Sharing Mode 2 |

Bits: 1 2 1 1 1

B11 B12 B13 B14 B15

Bits: 1 2 1 1

**Figure 9-1002ae—EHT MAC Capabilities Information field format**

***TGbe editor: Change Table 9-401j —Subfields of the EHT MAC Capabilities Information field (continued) as follows: (#12488):***

**Table 9-401j—Subfields of the EHT MAC Capabilities Information field *(continued)***

|  |  |  |
| --- | --- | --- |
| **Subfield** | **Definition** | **Encoding** |
| Two BQRs Sup- port(#13536) | For an AP, indicates support for receiving a frame with two BQR Con- trol subfields.  For a non-AP STA, indicates support for generating a frame with two BQR Control subfields. | For an EHT AP:  If the +HTC-HE Support subfield is 1:  Set to 1 to indicate that the AP is capable of receiving a frame with two BQR Con- trol subfields.  Set to 0 otherwise.  Reserved if the +HTC-HE Support sub- field is 0.  For an non-AP EHT STA:  If the +HTC-HE Support subfield is 1:  Set to 1 to indicate that the non-AP EHT STA is capable of transmitting a frame with two BQR Control subfields.  Set to 0 otherwise.  Reserved if the +HTC-HE Support subfield is 0. |
| EHT Link Adaptation Support(#10116) | Indicates support for link adaptation using the ELA Control subfield. | If the +HTC-HE Support subfield in HE MAC Capabilities Information field in HE Capabili- ties element is equal to 1:  Set to 0 (No feedback) if the STA does not provide EHT MFB.  Set to 2 (Unsolicited) if the STA can receive and provide only unsolicited EHT MFB.  Set to 3 (Solicited and unsolicited) if the STA is capable of receiving and providing EHT MFB in response to EHT MRQ and if the STA can receive and provide unsolic- ited EHT MFB.  The value 1 is reserved.  EHT MFB and EHT MRQ are MFB and MRQ using ELA Control subfield, respectively.  Reserved if the +HTC-HE Support subfield in HE MAC Capabilities Information field in HE Capabilities element is 0. |
| TXS Power Saving Support (#12488) | Indicates support for the TXS power saving operation | For an EHT AP:  Set to 1 to indicate that the AP is capable of not transmitting any frame to an unassigned STA that sets TXS PS Support subfield to 1 during allocated TXS time. Set to 0 otherwise.  For a non-AP EHT STA:  Set to 1 to indicate that the STA is capable of entering the doze state within TXS time that is not allocated to the STA by MU-RTS TXS Trigger frame. Set to 0 otherwise. |

***TGbe editor: Insert the following paragraphs at the end of subclause 35.2.1.2.1 (General) in the latest version of TGbe Draft: (#12488):***

(#12488) An EHT AP with dot11TXSPowerSavingOptionImplemented equal to true shall set the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 1; otherwise, the EHT AP shall set the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 0.

(#12488) An EHT STA with dot11TXSPowerSavingOptionImplemented equal to true shall set the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 1; otherwise, the EHT STA shall set the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 0.

***TGbe editor: Insert the following paragraph at the end of the subclause 35.2.1.2.2 (AP Behavior) in the latest version of TGbe Draft: (#12488):***

(#12488) If an AP that sets the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 1 transmits an MU-RTS TXS Trigger frame, the AP should not transmit any frame within the allocated time in the MU-RTS TXS Trigger frame to a non-AP STA that sets the TXS Power Saving Support Subfield in its transmitted EHT Capabilities element to 1 and is not addressed by the MU-RTS TXS Trigger frame.

***TGbe editor: Insert the following paragraph at the end of subclause 35.2.1.2.2 (Non-AP STA Behavior) in the latest version of TGbe Draft: (#12488):***

(#12488) When a non-AP STA that sets the TXS Power Saving Support subfield in its transmitted EHT Capabilities element to 1 receives an MU-RTS TXS Trigger frame, if the non-AP STA is not addressed by the MU-RTS Trigger frame, the non-AP STA may enter the doze state until the end of the time allocated in the MU-RTS TXS Trigger frame.

***TGbe editor: Insert the following text after “***dot11RestrictedTWTOptionImplemented***” of Annex C in the latest version of TGbe Draft: (#12485):***

(#12488)dot11TXSPowerSavingOptionImplemented OBJECT-TYPE SYNTAX TruthValue

MAX-ACCESS read-only STATUS current DESCRIPTION

"This is a capability variable.

Its value is determined by device capabilities.

This attribute, when true, indicates the ability of the EHT STA to support the TXS power saving operation. If the attribute is false, the EHT STA does not support the TXS power saving operation."

::= { StationConfigEntry <Last assigned + 1> }