IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LB233 CR on CID 17024 | | | | |
| Date: 2018-07-05 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Ming Gan | Huawei | F1-17, Huawei Industrial Base, Bantian, Longgang District, Shenzhen, China | +86 15889743667 | ming.gan@huawei.com |
| David Xun Yang | Huawei |  |  | david.yangxun@huawei.com |

Abstract

This submission proposes resolutions of comments received from TGax LB233. (The proposed change is based on TGax Draft 3.0)

* CID 17024 and some minor typos, including something in the accepted document 18-181/r2 was not accurately reflected in 802.11ax draft 3.0.

Revisions:

* Rev 0: Initial version of the document.

Interpretation of a Motion to Adopt

A motion to approve this submission means that the editing instructions and any changed or added material are actioned in the TGax Draft. This introduction is not part of the adopted material.

***Editing instructions formatted like this are intended to be copied into the TGax Draft (i.e. they are instructions to the 802.11 editor on how to merge the text with the baseline documents).***

***TGax Editor: Editing instructions preceded by “TGax Editor” are instructions to the TGax editor to modify existing material in the TGax draft. As a result of adopting the changes, the TGax editor will execute the instructions rather than copy them to the TGax Draft.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Page No.** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| 17024 | 9.4.2.247 | 180.63 | "RUmax is a normalizing factor depending on the maximum RU size of the BSS bandwidth, and is set to 1" Because this is a constant value 1, it is meaningless. | As in comment. | Revised-  Agree in principal. The proposed resolution is to correct it and other some typos.  TGax editor makes changes as shown in the as specified in 11-18/1511r0. |
|  |  |  |  |  |  |

**Discussion: *…***

**9.4.2 Elements**

**TGax editor: please change the subsection 9.4.2.247 of 11ax Draft 3.0 (#CID 17024):**

**9.4.2.247 HE BSS load element**

The HE BSS Load element reported by the AP contains information on utilization, frequency underutilization and spatial stream underutilization. The element format is defined in Figure 9-589dj (HE BSS Load element format). A STA receiving the element might use the information it conveys in an implementation-specific AP selection algorithm.



**Figure 9-589dj—HE BSS Load element format**

The Element ID, Length and Element ID extension fields are defined in 9.4.2.1 (General).

The HE STA Count field indicates the total number of STAs currently associated with this BSS that declare that they are HE STAs by transmitting their HE Capabilities elements.

The Utilization field, Frequency Underutilization field and Spatial Stream Underutilization field are defined as the percentage of time, linearly scaled with 255 representing 100%.

The Utilization field is that AP sensed the medium was busy due to a transmission between the AP and HE STAs, as indicated by the physical carrier sense (CS) mechanism. When more than one channels are in use for the BSS, the Utilization field value is calculated only for the primary channel. This percentage is computed using the formula

The Frequency Underutilization field is that AP has underutilized frequency domain resources for given busy time of the medium. This percentage is computed using the formula

The Spatial Stream Underutilization field is that AP has underutilized spatial domain resources for given busy time of the medium. This percentage is computed using the formula

where

dot11ChannelUtilizationBeaconIntervals represents the number of consecutive beacon intervals during which the channel busy time is measured (see subclause 9.4.2.28 (BSS Load element)). The default value of dot11ChannelUtilizationBeaconIntervals is defined in Annex C.

is the number of microseconds during which CCA indicated the channel was busy due to a transmission between the AP and HE STAs during the measurement duration. The resolution of the CCA busy measurement is in microseconds.

is the time interval, in units of microseconds, during which the primary 20 MHz channel is busy due to a transmission between the AP and HE STAs;

N is the number of busy events that occurred during the total measurement time which is less than or equal to dot11ChannelUtilizationBeaconIntervals consecutive beacon intervals.

is the number of RUs which are allocated within the BSS bandwidth during time interval ; is a normalizing factor depending on the RU size and equals the ratio of the jth RU size to the maximum RU size within the BSS bandwidth, i.e., if the j-th RU is a 26-tone RU and the BSS bandwidth is 20 MHz, then ;

is 1 if thej-th RU is occupied or interfered in the busy time , otherwise it is 0; Any 20 MHz channels which are not occupied by a PPDU are regarded as interferered RUs when the bandwidth of PPDU is less than the BSS bandwidth.

is the maximum number of spatial streams supported by the AP.

is the number of RUs whose size are at least 106 tones or greater and which are allocated within the BSS bandwidth during time interval ;

is a normalizing factor depending on the RU size. RUM is applied in respect of RUs whose size is at least 106 tones and equals the ratio of the jth RU size to the maximum RUM size within the BSS bandwidth, i.e., if the j-th RUM is a 106-tone RU and the BSS bandwidth is 20 MHz, then.

is the number of streams over the j-th RUM in the busy time.

If is 0, the Utilization filed, Frequency Underutilization field and Spatial Stream Underutilization field are reserved.

* **Neighbor Report element**

***TGax Editor: Insert new rows for subelement IDs 195-198 in Table 9-151 as follows and update the reserved row:***

|  |  |  |
| --- | --- | --- |
| * Optional subelement IDs for Neighbor report | | |
| Subelement ID | Name | Extensible |
| … |  |  |
| 195 | BSS Load element |  |
| 196 | HE BSS Load element | Yes |

The BSS Load subelement is the same as the BSS Load element as defined in 9.4.2.27 (BSS Load element).

The HE BSS Load subelement is the same as the HE BSS Load element as defined in 9.4.2.247 (HE BSS Load element).