IEEE P802.11  
Wireless LANs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CIDs related to BSS Color – Part 1 | | | | |
| Date: March 1, 2018 | | | | |
| Author(s): | | | | |
| Name | Affiliation | Address | Phone | email |
| Abhishek Patil | Qualcomm Inc. |  |  | appatil@qti.qualcomm.com |
| Alfred Asterjadhi | Qualcomm Inc. |  |  | aasterja@qti.qualcomm.com |
| George Cherian | Qualcomm Inc. |  |  | gcherian@qti.qualcomm.com |

Abstract

This submission proposes resolutions for following CID received for TGax LB230 (7):

12426, 11547, 12427, 13010, 11867, 12552, 12548

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Changed based on feedback when the doc was presented (3/1 MAC adhoc)

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** | **Commenter** | **Pg / Ln** | **Section** | **Comment** | **Proposed Change** | **Resolution** |
| 12426 | Liwen Chu | 150.42 | 9.4.2.238 | BSS Color Disable should be used in IBSS etc. also. | Change the definition of the subfield according to the comment. | Revised  Agree with the comment. Revised spec language in 9.4.2.238, 27.11.4 & 27.16.2.1 to cover IBSS, TDLS and mesh case.  **TGax editor, please make changes as shown in doc 11-18/0365r1** |
| 11547 | Dorothy Stanley | 150.43 | 9.4.2.238 | What do you set BSS Color to in the HE Operation element if the "BSS Color Disabled" is set to 1. | as in comment | Revised  Agree with the comment that there is an ambiguity in the spec. Added spec text to clarify that BSS Color field and the BSS\_COLOR parameter carry the (old) color when color is temporarily disabled.  **TGax editor, please make changes as shown in doc 11-18/0365r1** |
| 13010 | Massinissa Lalam | 305.05 | 27.11.4 | It is not clear in this subclause if an HE AP is allowed to set the BSS\_COLOR subfield to 0 (aka no color) and in such case what should be the value of the BSS Color Disabled subfield (should be set to 1)? Please provide clarification on this specific case. If it is not possible (which I doubt, but failed to easily find in the document where it is described) then this case "NOTE--An HE STA that received an HE PPDU with the RXVECTOR parameter BSS\_COLOR equal to 0 does not follow the spatial reuse rule described in 27.9 (Spatial reuse operation)." may never occur). | Add in this specific subclause the case where BSS\_COLOR subfield is set to 0 and its implication on other subfields (e.g. BSS Color Disabled). | Revised  Agree with the comment. Please see resolution for CID 11547  **TGax editor, please make changes as shown in doc 11-18/0365r1** |
| 11867 | Guoqing Li | 306.02 | 27.11.4 | Though obvious, there should be a statement that states when BSS color is disabled, the STA shall set the BSS color field in SIG-A to 0 in HE PPDU. | Add a sentence that specifies a STA shall set BSS color in SIG-A to 0 if the BSS color disable subefiels in the most recently received HE Operation IE is 0. | Revised  Agree with the comment. Please see resolution for CID 11547  **TGax editor, please make changes as shown in doc 11-18/0365r1** |
| 12427 | Liwen Chu | 153.03 | 9.4.2.241 | It should not be the current TBTT when Beacon is used to transmit the element. | change to after the transmission of the Beacon that carries BSS Color Change Announcement element. | Reject  The Color Switch Countdown field is indicating the number of TBTT remaining before the BSS starts using the new color. Making a critical decision based on the transmission of a beacon can be unreliable. It is possible that for some reason (medium access etc), the AP is unable to send the beacon or the beacon is delayed or there is beacon collision or STA is unable to receive the beacon. The color change should be with respect to a TBTT not transmission or reception of a beacon. Keeping the original text. |
| 12552 | Liwen Chu | 311.44 | 27.14.1 | "and the BSS Color Disabled subfield is 0 in the most recently received HE Operation element from the AP to which it is associated"  This can be removed | As in comment | Reject  When BSS Color is disabled Intra-PPDU power save and other features related to color should be disabled. Otherwise, the STA is making decision based on inaccurate information (i.e., the frame may belong to an OBSS which is using the same color as the STA’s associated BSS). |
| 12548 | Liwen Chu | 321.38 | 27.16.2.1 | Change shall to may or add other condition for shall | As in comment | Revised  Agree with the comment. Clarified spec language to say that it is conditionally mandatory (i.e., when certain condition is met then it shall do…)  **TGax editor, please make changes as shown in doc 11-18/0365r1** |

* **HE Operation element**

***TGax Editor: Please update the 3rd paragraph below figure 9-589cs as shown below (11ax D2.2 P155L26):***

[12426]An HE STA that transmits an HE Operation element sets the BSS Color Disabled subfield to 1 if the HE STA decides to temporarily disable the use of color for the BSS that it belongs to, for example, after detecting a BSS Color overlap in the neighborhood as described in 27.11.4 (BSS\_COLOR); otherwise the HE STA sets the BSS Color Disabled subfield to 0.

[11547, 13010, 11867]Note: While BSS Color Disabled subfield is set to 1, an HE STA continues to advertise a nonzero value in the BSS Color subfield

* **BSS Color Change Announcement element**

***TGax Editor: Please update the 3rd paragraph in this section as shown below (11ax D2.2 P160L4):***

The Color Switch Countdown field is set to the number of TBTTs that remain until the HE AP sending the BSS Color Change Announcement element switches to the new BSS color. A value of 0 indicates that the switch occurs at the current TBTT if the element is carried in a Beacon frame or [#Ed]at the next TBTT following the frame that carried the element if the frame is not a Beacon frame.

* **BSS\_COLOR**

***TGax Editor: Please update the 10th paragraph in this section as shown below (11ax D2.2 P324L24):***

[12426]An HE STA that transmits an HE Operation element and decides to temporarily disable the use of the BSS color for the BSS that it serves, for example, after detecting a BSS color collision with an OBSS (see 27.16.2.2 (Detecting and reporting BSS color collision)), shall set the value of BSS Color Disabled subfield in the HE Operation element to 1 to inform its associated peer HE STAs that the BSS color is disabled; otherwise the HE AP shall set the BSS Color Disabled subfield to 0. [11547, 13010, 11867]While BSS Color Disabled subfield is set to 1, an HE AP shall continue to advertise a non-zero value (same as before the color was disabled) in the BSS Color subfield of HE Operation element and in the TXVECTOR parameter BSS\_COLOR of an HE PPDU that it transmits.

Note: A non-AP HE STA sets the TXVECTOR parameter BSS\_COLOR of an HE PPDU that it transmits to the value advertised by the AP it intends to communicate with even if the AP has temporarily disabled BSS color.

* **Selecting and advertising a new BSS color**

***TGax Editor: Please update and split the 1st paragraph in this section as shown below (11ax D2.2 P340L30):***

[12426]An HE STA that transmits an HE Operation element shall select a BSS color as defined in 27.11.4 (BSS\_COLOR) for its BSS.

An HE AP may change the color of its BSS under certain conditions such as when it detects an OBSS is using the same color. The criteria for changing the BSS color and the method for selecting a new BSS color are beyond the scope of this standard.

[12426]Note 1: Since a BSS corresponding to IBSS or a mesh does not have a single coordinator in their BSS, the color change mechanism doesn’t apply for these BSS. STAs participating in such BSS can temporarily disable the color if they determine a color collision (see 27.11.4).

Note 2: When selecting a new color, an AP may take in to account the colors used by surrounding BSS as reported by its associated STAs (see 27.16.2.2.2 (Autonomous reporting of BSS color collision)).

***TGax Editor: Please update the 2nd paragraph in this section as shown below (11ax D2.2 P340L37):***

[12548]When an HE AP decides to change its BSS color, it shall announce its decision via the BSS Color Change Announcement element which may be carried in the Beacon, Probe Response and (Re)Association Response frames transmitted by the AP. The AP may also advertise the BSS color change event via the HE BSS Color Change Announcement frame. The BSS color change announcement should be advertised for a period of time that is sufficient for all STAs in the BSS, including STAs in power save mode, to have the opportunity to receive at least one BSS Color Change Announcement element before the BSS changes its color to the new value.

* **Autonomous reporting of BSS color collision**

***TGax Editor: Please split and update the 1st paragraph in this section as shown below (11ax D2.2 P341L29):***

that supports autonomous reporting of BSS color collision shall set to

A non-AP HE STA that supports autonomous reporting of BSS color collision may send a color collision report to its associated AP when it detects that color collision has occurred. The STA shall declare that a color collision has occurred if it receives an MPDU with at least three Address fields in the MAC header and with the same color as its associated BSS in which none of the Address fields match the BSSID of the BSS that the STA is associated with, or any of the other BSSs in the same multiple BSSID set to which its BSS belongs to.

***TGax Editor: Please delete the note under 1st paragraph in this section as shown below (11ax D2.2 P341L34):***