IEEE P802.11
Wireless LANs

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| Comment Resolution on Subclause 25.11 |
| Date: 2016-07-26 |
| Author(s): |
| Name | Affiliation | Address | Phone | email |
| Yongho Seok | NEWRACOM |  |  |  |
| Alfred Asterjadhi | Qualcomm  |  |  |  |

Abstract

This submission proposes resolutions of comments received from TGax comment collection (TGax Draft 0.1).

* CIDs: 73, 210, 192, 642, 1593, 1919, 2441, 643, 1595, 2259, 2260 (11 CID)

Note- The resolution of CID 72, 1920, 2671 (also related with Subclause 25.11) will be submitted later.

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 TGah 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** | **Clause** | **Comment** | **Proposed Change** | **Resolution** |
| --- | --- | --- | --- | --- | --- |
| 73 | 66.06 | 25.11 | "The virtual APs which are defined by TBD Multiple BSSID element shall select a same BSS Color." | "The AP assigns the same BSS Color to all the BSSes it manages." | Revised- Agree in principal. The sentence is not little clear. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 210 | 84.06 | 25.11 | This sentence is not clear: "The virtual APs which are defined by TBD Multiple BSSID element shall select a same BSS Color." | Change to: "All the virtual APs which are defined by TBD Multiple BSSID element shall use the same BSS Color." | Revised- Agree in principal.Also, IEEE 802.11 REVmc does not use the virtual AP terminology. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 192 | 83.26 | 25.11 | This list covers the STA ID settings for DL MU PPDUs. The settings for an UL MU PPDU and for the Trigger frame (when multiBSSID Is on) are missing. Clarify the remaining cases. | As in comment. | Revised-Agree in principal. 802.11ax SFD states that HE MU PPDU can be also transmitted to AP in a SU manner. In such case, the STA\_ID\_LIST should include the AID of the STA transmitting the HE MU PPDU. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 642 | 65.60 | 25.11 | BSS Color field size for HE-SIG-A was decided. | AP can select the BSS Color in the range 1 to 63. | Revised- Agree in principal. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 1593 | 65.48 | 25.11 | It says "The (T) DLS peer STA or the member of an IBSS" but in an IBSS things are always sent "in a direct path". Also, which peer STA? | Change to "A (T)DLS peer STA" | Revised- Agree in principal. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 1919 | 65.18 | 25.11 | Why is this section on TXVECTOR parameters in clause 25? | TXVECTOR is defined in 26.2.2. This text probably belongs there. | Rejected- Since TXVECTOR parameter is determined by the MAC sublayer, clause 25 is right. (Also refer 10.20 Group ID and partial AID in VHT PPDUs) |
| 2441 | 65.40 | 25.11 | The RTS or CTS frame can be carried in the HE PPDU. And, a STA transmitting an HE RTS or HE CTS PPDU that is addressed to an AP shall not set the TXVECTOR parameter UPLINK\_FLAG to 1.Otherwise, the 3rd party STA can ignore the HE RTS or HE CTS PPDU because it may enter a doze state as specified in 25.13.1 (Intra-PPDU power save for HE non-AP STAs).Change the second paragraph of sub-clause 25.11 as the following:"The Uplink Flag is carried in the TXVECTOR parameter UPLINK\_FLAG of an HE SU PPDU, HE extended range SU PPDU, and HE MU PPDU and is set as follows:--A STA transmitting an HE PPDU that is addressed to an AP and does not contain a control frame shall set the TXVECTOR parameter UPLINK\_FLAG to 1--A STA transmitting an HE PPDU that is addressed to an AP and contains a control frame shall set the TXVECTOR parameter UPLINK\_FLAG to 0" | As per comment | Rejected- Even though 3rd party STA ignores the HE RTS /CTS PPDU with the TXVECTOR parameter UPLINK\_FLAG set to 1, it can set the NAV through the HE-SIG-A information. There is no issue.  |
| 643 | 66.03 | 25.11 | It describes the BSS\_COLOR setting for the case that a non-AP HE STA is associated with AP. We also needs BSS\_COLOR setting method when STA has not been associated with AP (For example, random access of unassociated STA). | Please add the phrase to the last of the sentence as below.A non-AP HE STA transmitting an HE PPDU shall set the TXVECTOR parameter BSS\_COLOR to the value indicated in the BSS Color subfield of the HE Operation element received from the AP with which it is associated "or to which the PPDU is intended". | Revised-Agree in principal. Even if a STA is not associated, it knowing the BSS Color can transmit HE PPDU. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 1595 | 66.01 | 25.11 | What about unassociated APs? | Say what BSS\_COLOR is set to for unassociated STAs not in an IBSS | Revised- Agree in principal. Even if a STA is not associated, it knowing the BSS Color can transmit HE PPDU. TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 2259 | 65.46 | 25.11 | the UPLINK\_FLAG and BSS\_COLOR setting rules for mesh STAs is not defined, we can use a special UPLINK\_FLAG and BSS\_COLOR value combination to identify that a HE PPDU is sent by a mesh STA. | add a text for mesh STA, such as" A mesh STA transmitting an HE PPDU to another mesh STAshall set the TXVECTOR parameter UPLINK\_FLAG to 1 and shall set the TXVECTOR parameter BSS\_COLOR to 0(TBD)" | Revised- Agree in principal. Mesh STA set the TXVECTOR parameter UPLINK\_FLAG to 0 and the TXVECTOR parameter BSS\_COLOR to 0.TGax editor makes changes as shown in the as specified in 11-16/0862r1. |
| 2260 | 65.54 | 25.11 | If a STA transmitting an HE PPDU in a direct path to a TDLS peer STA using the same color as the infrastructure BSS and set the UPLINK\_FLAG to downlink, then the infrastructure STAs will wast power on these direct link PPDUs, and will also update the intra-NAV base on these PPDUs. Actually, the TDLS peers' transmission can be treated as OBSS transmission, and the infrastructure STA can do special reuse or reduce power consumption. | clarify How to set the BSS\_COLOR when the HE PPDU was sent by a TDLS STA in a direct path, how to set the NAV timer when receiving a direct link PPDU? | Revised- The HE PPDU sent by a DLS or TDLS STA in a direct path shall set the TXVECTOR parameter BSS\_COLOR to the value of the value indicated in the BSS Color subfield of the HE Operation element received from the AP.TGax editor makes changes as shown in the as specified in 11-16/0862r1. |

Discussion) Proposed BSS Color values

1. Use BSS Color value 0 if one or more intended recipient STAs of the HE PPDU is not a member of transmitter BSS (e.g., Public Action frame, Probe Request and Response frame)
	1. Only HE SU PPDU (HE extended SU PPDU) can use this color.
	2. All HE STAs shall not discard HE PPDU with BSS color 0.
2. Use BSS Color value 1-63 for HE BSS, MBSS, IBSS and TDLS frame.
	1. A HE STA may ignore HE PPDU with BSS Color 1-63 per OBSS\_PD (as specified in SR mechanism).
* TXVECTOR parameters STA\_ID\_LIST, UPLINK\_FLAG and BSS\_COLOR for an HE PPDU

***TGax editor: change the sub-clause 25.11 as the following:***

Each element of the TXVECTOR parameter STA\_ID\_LIST identifies the STA or group of STAs that is the recipient of an RU in the HE MU PPDU. If an RU is intended for a single non-AP STA, then the STA\_ID\_LIST element for that RU is set to the ~~STA’s~~ AID of the STA receiving the PSDU contained in that RU. If an RU is intended for an AP, then the STA\_ID\_LIST contains only one element that is set to the AID of the non-AP STA transmitting the PPDU. If an RU is intended for a group of STAs then the STA\_ID\_LIST element is set as follows:

* For an ~~single BSS~~ AP with dot11MultiBSSIDActivated set to false, if the RU is intended for all STAs in the BSS, the STA\_ID\_LIST element is set to 0;
* For an ~~multiple BSS~~ AP with dot11MultiBSSIDActivated set to true, if the RU is intended for all STAs in ~~one of~~ its any BSS~~s~~, the STA\_ID\_LIST element is set to the partial virtual bitmap value assigned for the group addressed ~~AID~~ frame on transmitted BSSID and nontransmitted BSSIDs ~~assignment~~ in the ~~TIM according to the existing Multi-BSSID TIM operation~~ (see 9.4.2.6 (TIM element));
* For an ~~multiple BSS~~ AP with dot11MultiBSSIDActivated set to true, if the RU is intended for all STAs on ~~all~~ its all BSSs, the STA\_ID\_LIST element is set to 2047.

The Uplink Flag is carried in the TXVECTOR parameter UPLINK\_FLAG of an HE SU PPDU, HE extended range SU PPDU, and HE MU PPDU and is set as follows:

* A STA transmitting an HE PPDU that is addressed to an AP shall set the TXVECTOR parameter UPLINK\_FLAG to 1
* An AP transmitting an HE PPDU that is addressed to a non-AP STA shall set the TXVECTOR parameter UPLINK\_FLAG to 0
* A STA transmitting an HE PPDU in a direct path to a (T)DLS peer STA, or to a member of an IBSS, or to a mesh STA, shall set the TXVECTOR parameter UPLINK\_FLAG to 0

NOTE—~~The~~A (T)DLS(#1592) peer STA or the member of an IBSS can identify that the HE PPDU is sent in a direct path from the To DS and From DS fields of the MAC header of its MPDU(s)

The TXVECTOR parameter UPLINK\_FLAG is not present for HE trigger-based PPDUs.

The BSS Color is an identifier of the BSS and is used to assist a receiving STA in identifying the BSS from which a PPDU originates so that the STA can use the channel access rules as described in 25.9 (Spatial reuse operation)(#2338) or reduce power consumption as described in 25.13.1 (Intra-PPDU power save for HE non-AP STAs).

An ~~HE AP~~ HE STA transmitting an HE Operation element shall select a value in the range 1 to ~~TBD~~ 63 to include in the BSS Color subfield of the HE Operation element~~s~~ that it transmits and shall maintain that single value of the BSS Color subfield for the lifetime(#1594) of the BSS. An ~~HE AP~~ HE STA which transmitted an HE Operation element ~~transmitting an HE PPDU~~ shall set the TXVECTOR parameter BSS\_COLOR of an HE PPDU to the value indicated in the BSS Color subfield of its HE Operation element.

~~A non-AP~~ An HE STA receiving an HE Operation element ~~transmitting an HE PPDU~~ shall set the TXVECTOR parameter BSS\_COLOR of an HE PPDU to the value indicated in the BSS Color subfield of the HE Operation element received from the ~~AP~~ HE STA (including AP, IBSS STA, mesh STA or TDLS STA) with which it is associated or intends to transmit. (#643, 2259, 2260)

An HE STA that received an HE PPDU with RXVECTOR parameter BSS\_COLOR equal to a value between 1 and 63 may ignore the HE PPDU as described in 25.9 (Spatial reuse operation).

An HE STA transmitting an HE SU PPDU or an HE extended range SU PPDU of which one or more intended recipient STAs is not a member of a transmitting STA’s BSS shall set the TXVECTOR parameter BSS\_COLOR of the HE PPDU to either 0 or the BSS Color of the BSS associated the intended recipient STAs.

An HE STA that received an HE SU PPDU or an HE extended range SU PPDU with RXVECTOR parameter BSS\_COLOR equal to 0 shall not discard the HE PPDU.

A HE STA associated with an HE AP that is transmitting an HE PPDU in a direct path to a DLS or TDLS peer STA shall set the TXVECTOR parameter BSS\_COLOR to the value of the value indicated in the BSS Color subfield of the HE Operation element received from the HE AP.

~~The virtual APs which are~~All APs which are members of a Multiple BSSID Set ~~defined by TBD Multiple BSSID element~~ shall ~~select a~~ use the same BSS Color. (#73, 210)

***TGax editor: change the last paragraph of sub-clause 9.4.2.214 as the following:***

The BSS Color field is an unsigned integer whose value is the BSS Color of the BSS corresponding to the AP, IBSS STA, mesh STA or TDLS STA which transmitted this element, except that a value of 0 in this field ~~indicates that there is no BSS Color for this BSS.~~ is used if one or more intended recipient STAs of an HE PPDU is not a member of a transmitting STA’s BSS (e.g., Public Action frame, Probe Request/Response frame).