IEEE P802.11
Wireless LANs

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| Comment resolutions for intra-PPDU power save |
| Date: 2016-07-15 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (7 CIDs):

* 76, 194, 258, 259, 1598, 1773, 2849

Revisions:

* Rev 0: Initial version of the document.
* Rev 1: Included suggestions from Mark, Robert on CID 1598. Changes are highlighted in green.

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.***

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| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 76 | Ahmadreza Hedayat | 67.31 | There should be another condition on whether there is a pending payload for a STA in order for the STA to go to doze state. | Add additional condition such that STAs that have pending payloadshould not go to doze, or first receive their pending payload before going to doze state. | Rejected –The STA that is in awake state can go to doze state only until the end of a PPDU that is sent within its BSS and shall be awake after the end of the PPDU, in which case it can receive any pending DL BUs. Please note that intra-PPDU PS does not allow the STA to go to doze state indefinitely which would cause the AP to defer transmission of DL BUs to the STA. |
| 194 | Alfred Asterjadhi | 84.60 | There is also the case of a DL PPDU that is transmitted with an unsupported TX parameter that may be used by the STA to doze (when it is of same color) | As in comment. | Revised –Agree in principle with the comment. Proposed resolution clarifies that the STA can go to doze state in the case of a DL PPDU that is generated by its AP (same BSS Color) and the PHY issues a PHY-RXEND.indication primitive that contains UnsuportedRate.TGax editor to make the changes shown in 11-16/0844r1 under all headings that include CID 194. |
| 258 | Anton Kiryanov | 66.47 | UL\_FLAG is always 0 for HE MU PPDU. The sentence is redundant. | Remove the sentence. | Rejected –The UL\_FLAG can be set to 1 in HE MU PPDUs as well. Please refer to the normative behavior in 25.11 (TXVECTOR parameters STA\_ID\_LIST, UPLINK\_FLAG and BSS\_COLOR for an HE PPDU), quoting: “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” |
| 259 | Anton Kiryanov | 66.55 | HE MU PPDU is always DL PPDU. So HE MU PPDU can not have UL\_FLAG = 1. "The PPDU is an HE MU PPDU" shall be removed from above | Remove "HE MU PPDU" from line 51 | Rejected –The UL\_FLAG can be set to 1 in HE MU PPDUs as well. Please refer to the normative behavior in 25.11 (TXVECTOR parameters STA\_ID\_LIST, UPLINK\_FLAG and BSS\_COLOR for an HE PPDU), quoting: “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” |
| 1598 | Mark RISON | 66.37 | Are we talking about state (something determined by the MAC) or mode (something determined by the SME and communicated to the MAC using MLME-POWERMGT.request)? | Clarify | Revised – Agree in principle with the comment that there is an inconcisency in the used terminology deriving from the fact that we cite the baseline. Proposed resolution resolves this inconsistency by removing the condition.TGax editor to make the changes shown in 11-16/0844r1 under all headings that include CID 194. |
| 1773 | Po-Kai Huang | 52.03 | Does AP support reception of HE MU PPDU? In other words, does non-AP STA support transmission of HE MU PPDU? If so, under what condition does it support? If not, it is impossbile for HE MU PPDU to have UL\_FLAG equal to 1. | Clarify the support of HE MU PPDU reception on the AP/transmission of HE MU PPDU on the non-AP STA. The UL\_FLAG bit may be deleted in HE MU PPDU if reception of HE MU PPDU is not supported at the AP side. | Rejected –The UL\_FLAG can be set to 1 in HE MU PPDUs as well. Please refer to the normative behavior in 25.11 (TXVECTOR parameters STA\_ID\_LIST, UPLINK\_FLAG and BSS\_COLOR for an HE PPDU), quoting: “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” |
| 2849 | Yusuke Tanaka | 66.62 | To further improve the power efficiency, MAC level power save mechanism should be defined. | Add the following rule at Line 65"An HE AP may indicate that the NAV set by the Duration field in the PPDU will not be updated. If an HE non-AP STA receives this PPDU, the HE non-AP STA may enter the doze state until the end of the NAV." | Rejected –Enabling the STA to go to doze state for the duration of the NAV will cause issues since the AP may need to increasingly send CF-End frames to truncate the TXOPs (if this happens the STA cannot go to sleep, since it will miss CF-End reception). Also the likelihood for the STA to miss inter-BSS PPDUs which set the inter-BSS NAV may increase as well.  |

**Discussion:** *None.*

25.13 Power management

**25.13.1 Intra-PPDU power save for HE non-AP STAs**

An HE non-AP STA has dot11IntraPPDUPowerSaveOptionActivated equal to true operates in intra-PPDU power save mode.(#1598)

An HE non-AP STA that is in intra-PPDU power save mode may enter the doze state until the end of a received PPDU when one of the following conditions is met:

1. The PPDU is an HE MU PPDU with:
	* The value of the RXVECTOR parameter BSS\_COLOR equal to the BSS color of the BSS with which the STA is associated and,
* The value of the RXVECTOR parameter UL\_FLAG is equal to 0 and,
* The values obtained from the RXVECTOR parameter STA\_ID\_LIST do not match the identifier of the STA or the broadcast identifier(s) intended for the STA

**TGax Editor: *Change the paragraph below of this subclause as follows (#CID 194, 782):***

1. The PPDU is an HE MU PPDU, HE SU PPDU, or HE extended range SU PPDU with:
	* The value of the RXVECTOR parameter BSS\_COLOR equal to the BSS color of the BSS with which the STA is associated and the value of the RXVECTOR parameter UL\_FLAG is equal to 1 or,
	* The value of the RXVECTOR parameter BSS\_COLOR equal to the BSS color of the BSS with which the STA is associated, the value of the RXVECTOR parameter UL\_FLAG is equal to 0, and the PHY has issued an PHY-RXEND.indication(UnsupportedRate) primitive(#194)
2. The PPDU is an HE trigger-based PPDU with:
	* The value of the RXVECTOR parameter BSS\_COLOR equal to the BSS color of the BSS with which the STA is associated