IEEE P802.11
Wireless LANs

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| Operating Mode Indication – PART Ⅱ Tx OMI (TOMI) |
| Date: 2016-07-05 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D0.1 with the following CIDs (**13 CIDs**):

* 95, 365, 656, 794, 1134, 1135, 1260, 2298, 2407, 2463, 2469, 2658, 2659

Revisions:

* Rev 0: Initial version of the document
* Rev 1: Incorporated editorial suggestions received during the F2F from Yongho, Brian, and Matt (changes 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.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CID** | **Commenter** | **P.L** | **Comment** | **Proposed Change** | **Resolution** |
| 95 | Alfred Asterjadhi | 32.52 | Define the TBD in ROMI subfield. If nothing is needed then remove that subfield and define the length to be 5 bits. | As in comment. | Revised —Agree in principle with the comment that the TBD needs to be defined. The proposed resolution is to define a ROM Indication subfield that defines the length to be 12 bits.TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 95. |
| 2298 | Yasuhiko Inoue | 14.38 | TBDs in this subclause has to be determined. | Please resolve TBDs. | Revised —Agree in principle with the comment. The proposed resolution is defined TBD in the subclause. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 2298. |
| 2407 | Yongho Seok | 14.65 | For supporting 80+80 MHz, change "3 for 160 or 80+80 MHz." | As per comment | Revised —Agree in principle with the comment. The proposed resolution changes the related text by adding the following text: or 80 + 80 MHz. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 2407 |
| 2463 | Yongho Seok | 63.06 | "The responding HE STA shall not transmit a subsequent PPDU to the transmitting HE STA that uses a bandwith or a number of spatial stream not indicated as currently supported by the transmitting HE STA."Clarify whether the responding HE STA can transmit a Trigger frame (as a subsequent PPDU) to the transmitting HE STA that assigns more spatial streams than the value indicated by the Rx NSS subfield. | As per comment | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change though the resolution is inline with the motion passed in May F2F where a Tx NSS subfield was proposed to be added to the OMI A-Control field. Ref document: [https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device Multi-radio-Coexistence-and-UL-MU-operation.pptx](https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device%20Multi-radio-Coexistence-and-UL-MU-operation.pptx)TGax editor to make the changes shown in 11-16/0882r1 under all headings that include CID 2463. |
| 1134 | Kwok Shum Au | 14.60 | There is no "RX NSS subfield". | Change "RX NSS subfield" with "Rx NSS subfield". | Revised —Agree with the comment. The proposed resolution is revised with the suggested change.TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 1134. |
| 365 | Brian Hart | 14.65 | Missing 80+80 | Add 80+80 | Revised —Agree with the comment. The proposed resolution changes the related text by adding the following text: or 80 + 80 MHz. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 365. |
| 656 | Huizhao Wang | 14.65 | Missing 80+80MHz indication in "Rx Channel Width" | Add "80+80MHz" | Revised —Agree with the comment. The proposed resolution changes the related text by adding the following text: or 80 + 80 MHz. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 656. |
| 794 | Jeongki Kim | 14.65 | Change the text related to 160MHz BW as follows:3 for 160 or 80+80 MHz | Change the text related to 160MHz BW to the following text:, and 3 for 160 or 80+80 MHz | Revised —Agree with the comment. The proposed resolution changes the related text by adding the following text: or 80 + 80 MHz. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 794. |
| 1135 | Kwok Shum Au | 14.64 | There is no "RX Channel Width subfield". | Change "RX Channel Width subfield" with "Rx Channel Width subfield". | Revised —Agree with the comment. The proposed resolution is revised with the suggested change.TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 1135. |
| 1260 | Mark RISON | 14.65 | What about 80+80? | Change "160 MHz" to "160 MHz or 80+80 MHz" | Revised —Agree in principle with the comment. The proposed resolution changes the related text by adding the following text: or 80 + 80 MHz. TGax editor to make the changes shown in 11-16-0882r1 under all headings that include CID 1260. |
| 2659 | Young Hoon Kwon | 63.01 | If the responding HE STA is a serving AP that is capable of scheduling UL MU PPDU, it is not clear if the value indicated by the Rx NSS subfield has any impact on the number of spatial streams for transmitting frames from the transmitting HE STA. | Clarify if the value indicated by the Rx NSS subfield has restriction on scheduling the number of spatial streams for transmitting frames from the transmitting HE STA. If it is not, then define a mechanism that can control the number of spatial streams for transmitting frames from the transmitting HE STA. | Revised –Agree in principle with the comment. Proposed resolution accounts for the suggested change though the resolution is inline with the motion passed in May F2F where a Tx NSS subfield was proposed to be added to the OMI A-Control field. Ref document: [https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device Multi-radio-Coexistence-and-UL-MU-operation.pptx](https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device%20Multi-radio-Coexistence-and-UL-MU-operation.pptx)TGax editor to make the changes shown in 11-16/0882r1 under all headings that include CID 2659. |
| 2469 | Yongho Seok | 63.06 | "The responding HE STA shall not transmit a subsequent PPDU to the transmitting HE STA that uses a bandwith or a number of spatial stream not indicated as currently supported by the transmitting HE STA."Clarify whether the responding HE STA can transmit a Trigger frame (as a subsequent PPDU) to the transmitting HE STA that assigns higher bandwidth than the value indicated by the Rx Channel Width. | As per comment | Revised –Agree in principle with the comment. Proposed resolution clarifies that the Rx Channel Width applies to the Tx channel width as well. TGax editor to make the changes shown in 11-16/0882r1 under all headings that include CID 2469. |
| 2658 | Young Hoon Kwon | 62.59 | If the responding HE STA is a serving AP that is capable of scheduling UL MU PPDU, it is not clear if the value indicated by the Channel Width subfield has any impact on the operating channel width for transmitting frames from the transmitting HE STA. | Clarify if the value indicated by the Channel Width subfield has restriction on scheduling the operating channel width for transmitting frames from the transmitting HE STA. If it is not, then define a mechanism that can control the operating channel width for transmitting frames from the transmitting HE STA. | Revised –Agree in principle with the comment. Proposed resolution clarifies that the Rx Channel Width applies to the Tx channel width as well. TGax editor to make the changes shown in 11-16/0882r1 under all headings that include CID 2658. |

**Discussion:** This document also includes motioned conceps passed during the IEEE F2F meeting in May: [https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device Multi-radio-Coexistence-and-UL-MU-operation.pptx](https://mentor.ieee.org/802.11/dcn/16/11-16-0657-00-00ax-In-device%20Multi-radio-Coexistence-and-UL-MU-operation.pptx), however, noting that from the coexistence point of view it is not important the maximum power the STA is capable to transmit but rather the occurrence of power fluctuations at the non-AP STA due to coexistence for a period of time. As such a TX power flag is defined to be used for signaling power fluctuations which is then used by the AP to reset its link adaptation algorithms for that particular STA.

## 9.2.4.6.3 Operation mode indication

**TGax Editor: *Change the paragraph below as follows:***

If the Control ID subfield is 1, the Control Information subfield contains information related to the operating mode change of the STA transmitting the frame containing this information (see 25.8 (Operating mode change)).

The format of the Control Information subfield is defined in Figure 9-14d (Control Information subfield format when Control ID subfield is 1).

**TGax Editor: *Change the Figure9-14d below as follows:***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | B0 B2 | B3 B4 | B5 | B6 B8 | B9 | B10 B11 |
|  | RX NSS  | Channel Width | UL MU Disable | Tx NSS | TX Power Flag | Reserved |
| Bits: | 3 | 2 | 1 | 3 | 1 | 2  |

Figure 9‑14d - Control Information subfield format when Control ID subfield is 1*(#95, 2298, 2407, 2463)*

**TGax Editor: *Replace “TBD” with “12” in Table 9-18a in the 2nd column of row that has Control ID value 1.****(#****95)***

**TGax Editor: *Change the paragraphs below of this subclause as follows:***

The Rx NSS subfield indicates the maximum number of spatial streams, *NSS*, that the STA can receive and is set to *NSS* – 1. *(#1134)*

The Channel Width subfield indicates the operating channel width supported by the STA in reception, and is set to 0 for 20 MHz, 1 for 40 MHz, 2 for 80 MHz, and 3 for 160 MHz or 80 + 80 MHz*.* *(#365, 656, 794, 1135, 1260, 2407)*

The UL MU Disable subfield indicates whether UL MU operation is suspended or resumed by the non-AP STA. The UL MU Disable subfield is set to 1 to indicate that UL MU operation is suspended; otherwise it is set to 0 to indicate that UL MU operation is resumed. An AP sets the UL MU Disable subfield to 0.

The Tx NSS subfield indicates the maximum number of spatial streams, *NSS*, that the STA can transmit and is set to *NSS* – 1.*(#2463)*

The TX Power Flag subfield indicates whether transmit power fluctuates at the non-AP STA transmitting the frame. The TX Power Flag subfield is set to 1 to indicate that the maximum transmit power fluctuates after the current transmission; otherwise the TX Power Flag subfield is set to 0.

## 25.8 Operating mode change

**25.8.1 General**

[*Omissis*]

**TGax Editor: *Insert a new subclause below as follows:***

**25.8.3 Rules for transmit operation mode (TOM) indication**

An OMI initiator that is a non-AP STA may indicate changes in its transmit parameters by sending a frame that contains the OMI A-Control field to the OMI responder. The OMI initiator shall set:

* The UL MU Disable subfield to 1 to indicate suspension of the UL MU operation (see 25.2.6 (UL MU operation); otherwise it shall set the UL MU Disable subfield to 0 to indicate resumption or continuation of participation in UL MU operation.
	+ An AP that is an OMI initiator shall set the UL MU Disable subfield to 0.
* The Tx NSS subfield to the maximum number of *Nss* that the STA will use in response to Trigger frames. *(#2463, 2659)*

NOTE: The Channel Width subfield indicates the maximum channel width that the STA will use in response to Trigger frames

The TX Power Flag subfield to 1 to indicate that the transmit power of the STA will fluctuate following the transmission of the frame containing the OMI A-Control field; otherwise the STA shall set the TX Power Flag subfield to 0 to indicate that no transmit power fluctuations are expected.An OMI responder that successfully receives a frame containing an OMI A-Control field from an OMI initiator:

* Shall consider the OMI initiator as not participating in UL MU operation for subsequent TXOPs (see 25.5.2 (UL MU operation)) when the UL MU Disable subfield is 1 in the received OMI A-Control field

NOTE: The STA sets the UL MU Disable subfield to 1 to indicate that it will not respond to all variants of the Trigger frame.

* Shall consider the OMI initiator as participating in UL MU operation for subsequent TXOPs when the UL MU Disable subfield is 0 in the received OMI A-Control field in which case:
	+ The maximum number of spatial streams that the OMI initiator can transmit in response to Trigger frames is indicated in the Tx NSS subfield of the OMI A-Control field*(#2463)*
	+ The maximum channel width over which the OMI initiator can transmit in response to Trigger frames is indicated in the Channel Width subfield of the OMI A-Control field*(#2469, 2658)*
* Shall indicate a number of spatial streams in the Per User Info field of a Trigger frame, which contains the AID of the OMI initiator, that is less than or equal to the number of spatial streams that is calculated from the Tx NSS subfield of the OMI A-Control field received by the OMI initiator*(#2463, 2659)*
* Shall indicate a channel width in the RU Allocation subfield of the Per User Info field of a Trigger frame, containing the AID of the OMI initiator, that is less than or equal to the value specified in the Channel Width subfield of the OMI A-Control field received by the OMI initiator*(#2469, 2658)*
* Shall consider the OMI initiator as having transmit power fluctuations for the subsequent TXOPs when the TX Power Flag subfield is 1 in the OMI A-Control field in which case it should reset its link adaptation procedures.