IEEE P802.11
Wireless LANs

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| LB225 11ax D1.0 Comment Resolution 10.7 Remaining CIDs |
| Date: 2017-08-25 |
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Abstract

This submission proposes resolutions for multiple comments related to TGax D1.0 with the following CIDs :

* 4756, 9605, 9606, 9855.

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.***

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| **CID** | **PP** | **LL** | **Comment** | **Proposed Change** | **Resolution** |
| 4756 | 126 | 1 | Is DCM considered an MCS? If yes (which I think it should) then specify what is the non-HT refence rate for the conversion in this table, or somewhere else. | As in comment. | **Revised****Discussion: DCM is one the parameter to decide the data rate of HE PPDU. There are two options to decide the non-HT reference rate for the legacy frames. Option1 is that the MCS of the HE PPDU is solely used to select the non-HT reference rate. Option2 is that the data rate of non-HT PPDU is not more that the rate of HE PPDU decided by HE MCS and DCM. With option 2, some PPDU carring the responding frame may have to use HE PPDU although the TXOP responder can use legacy PPDU (because of its higher TX power). Propose to use option 1.****TGax editor to make changes in 11-17/1294r0 under CID 4756.**  |
| 9605 | 124 | 25 | On Table 10-6 (Modulation classes), Clause 28 (High Efficiency (HE) PHY specification) can select DSSS, HR/DSSS and ERP-OFDM, like Clause 19 (High Throughput (HT) PHY specification) PHY. | As per comment. | **Revised** **TGax editor to make changes in 11-17/1294r0 under CID 9605** |
| 9606 | 126 | 10 | On Table 10-7 (Non-HT reference rate), when the DCM is used, the non-HT reference rate shall be reduced to a half.For example, if the modulation is QPSK and the coding rate is 1/2 and the DCM is not used, the non-HT reference rate is 12 Mb/s. But, if the modulation is QPSK and the coding rate is 1/2 and the DCM is used, the non-HT reference rate is 6 Mb/s. | On Table 10-7, insert the exceptation cases for the non-HT reference rate when the DCM is used. | **Revised****Discussion: DCM is one the parameter to decide the data rate of HE PPDU. There are two options to decide the non-HT reference rate for the legacy frames. Option1 is that the MCS of the HE PPDU is solely used to select the non-HT reference rate. Option2 is that the data rate of non-HT PPDU is not more that the rate of HE PPDU decided by HE MCS and DCM. With option 2, some PPDU carring the responding frame may have to use HE PPDU although the TXOP responder can use legacy PPDU (because of its higher TX power). Propose to use option 1.****TGax editor to make changes in 11-17/1294r0 under CID 9606.**  |
| 9855 | 124 | 25 | In 11ac, these are not applicable because these frames don't exist in 5GHz band, but 11ax can be operated in both 2.4GHz and 5GHz. HE STA may also need to support DSSS/ERP format for response frame. So, modulation class for DSSS/ERP-OFDM needs to be defined similar to 11n. | Change "N/A" in "DSSS and HR/DSSS" and "ERP-OFDM" case to the same as conditions in Clause 19. | **Revised** **TGax editor to make changes in 11-17/1294r0 under CID 9855** |
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| ~~5046~~ | ~~123~~ | ~~29~~ | ~~Due to power differences and other considerations, a situation can arise when the transmitter of a response frame using the standard required response MCS value is employing an MCS that will not work for the link because of the asymmetry, e.g. tx power asymmetry. Allow a STA to dictate the response PPDU MCS to avoid this problem.~~ | ~~Allow the transmitter of a response eliciting MPDU to include an indication of an appropriate MCS for the response MPDU. Expect a submission detailing some changes.~~ | **~~Rejected~~****~~Discussion: No submission from the commenter is received, and it is not clear how to solve the legacy issue, whether it is mandatory.~~** |
| ~~8099~~ | ~~123~~ | ~~29~~ | ~~Due to power differences and other considerations, a situation can arise when the transmitter of a response frame using the standard required response MCS value is employing an MCS that will not work for the link because of the asymmetry, e.g. tx power asymmetry. Allow a STA to dictate the response PPDU MCS to avoid this problem.~~ | ~~Allow the transmitter of a response eliciting MPDU to include an indication of an appropriate MCS for the response MPDU. Expect a submission detailing some changes.~~ |  |

**10.7.9 Modulation classes**

TGax editor: Change Table 10-6 as follows:

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| * Modulation classes
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| Description of modulation | Condition that selects this modulation class |
| Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications) to Clause 18 (Extended Rate PHY (ERP) specification) PHYs or Clause 20 (Directional multi-gigabit (DMG) PHY specification) PHY | Clause 19 (High Throughput (HT) PHY specification) PHY | Clause 21 (Very High Throughput (VHT) PHY specification) PHY | Clause 28 |
| DSSS and HR/DSSS | Clause 15 (DSSS PHY specification for the 2.4 GHz band designated for ISM -applications) or Clause 16 transmission  | FORMAT is NON\_HT.NON\_HT\_MODULATION is ERP-DSSS or ERP-CCK. | N/A | FORMAT is NON\_HT.NON\_HT\_MODULATION is ERP-DSSS or ERP-CCK.(#9605, 9855) |
| ERP-OFDM | 18.4 (ERP operating specifications (general)) transmission  | FORMAT is NON\_HT.NON\_HT\_MODULATION is ERP-OFDM. | N/A | FORMAT is NON\_HT.NON\_HT\_MODULATION is ERP-OFDM.(#9605, 9855) |
| OFDM | Clause 17 (Orthogonal frequency division multiplexing (OFDM) PHY specification) transmission  | FORMAT is NON\_HT.NON\_HT\_MODULATION is OFDM or NON\_HT\_DUP\_OFDM. | FORMAT is NON\_HT.NON\_HT\_MODULATION is OFDMor NON\_HT\_DUP\_OFDM. | FORMAT is NON\_HT.NON\_HT\_MODULATION is OFDMor NON\_HT\_DUP\_OFDM. |
| HT | N/A | FORMAT is HT\_MF or HT\_GF. | FORMAT is HT\_MF or HT\_GF. | FORMAT is HT\_MF or HT\_GF. |
| DMG Control | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and MCS is 0 | NA | NA | N/A |
| DMG SC | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and  | NA | NA | N/A |
| DMG OFDM | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and  | NA | NA | N/A |
| DMG Low-power SC | Clause 20 (Directional multi-gigabit (DMG) PHY specification) transmission and  | NA | NA | N/A |
| VHT | N/A | N/A | FORMAT is VHT. | FORMAT is VHT |
| HE | N/A | N/A | N/A | FORMAT is HE\_SU, HE\_EXT\_SU, HE\_MU or(#6517) HE\_TRIG |

**10.7.10 Non-HT basic rate calculation**

TGax editor: Change the first paragraph as follows:

This subclause defines how to convert an HT MCS ~~or~~, a VHT-MCS or an HE-MCS to a non-HT basic rate for the purpose of determining the rate of the response frame. The value 1 of the DCM of an HE PPDU has no influence when deciding the non-HT basic rate for the purpose of determine the rate of the responding frame solicited by HE PPDU (#4756, 9606). It consists of two steps as follows:

* Use the modulation and coding rate determined from the HT MCS (defined in 19.5 (Parameters for HT MCSs)) or VHT-MCS (defined in 21.5 (Parameters for VHT-MCSs)) or HE-MCS (defined in 28.5 (Parameters for HE-MCSs)) to locate a non-HT reference rate by lookup into Table 10-7.[[1]](#footnote-1) In the case of an MCS with UEQM, the modulation of stream 1 is used.
* The non-HT basic rate is the highest rate in the BSSBasicRateSet that is less than or equal to this non-HT reference rate.

1. For example, if an HT PPDU transmission uses 64-QAM and coding rate of 3/4, the related non-HT reference rate is 54 Mb/s. [↑](#footnote-ref-1)