IEEE P802.11  
Wireless LANs

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| Comment Resolution for Section 38.3.11 (UHR modulation and coding schemes (UHR-MCSs) and Unequal modulation (UEQM)) | | | | |
| Date: 2025-05-10 | | | | |
| Author(s): | | | | |
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Abstract

This submission proposes resolution for the following 22 CIDs on Section 38.3.11 (UHR modulation and coding schemes (UHR-MCSs) and Unequal modulation (UEQM)) in TGbn D0.1. All resolutions are based on TGbn D0.2.

* 65, 1088, 1149, 66, 1150, 1585, 2276, 67, 309, 1089, 1151, 1342, 1586, 2067, 2278, 2277, 68, 3505, 3551, 932, 2769, 3243

Revisons:

* r0: initial version

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| **CID** |  | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 65 | Jialing Li | 38.3.11 | 133.62 | Change each of the two instances of "MCS TBD" in this paragraph to "UHR-MCS 17, 19, 20 and 23", per motion #195. | Refer to the comment. | Revised  Agree with the commenter. The text is updated correspondingly.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 1088 | Kanke Wu | 38.3.11 | 133.62 | "MCS TBD" replaced by "MCS 17, 19, 20, and 23", same applies to other TBD locations in this paragraph | See comment | Revised  TGbn Editor: the same resolution as for CID65, no extra change needed |
| 1149 | Dong Guk Lim | 38.3.11 | 133.62 | Update the MCS TBD based on the passed Motion 195 | As the comment. | Revised  TGbn Editor: the same resolution as for CID65, no extra change needed |

*TGbn Editor: Please make the following change in P142L62 in Section 38.3.11 of D0.2.*

UHR-MCS 0-15 are the same as EHT-MCS 0-15, respectively. MCS 17, 19, 20 and 23 (#65)(#1088)(#1149) are combinations of existing FEC coding rate and modulation order. MCS 17, 19, 20 and 23 (#65)(#1088)(#1149) may be used for single spatial stream transmissions, as well as to equal modulation and unequal modulation cases in multiple spatial stream transmissions.

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| 66 | Jialing Li | 38.3.11 | 134.03 | There is not a motion on the max Nss for EQM. From signaling design in user field, it's clear that it can't exceed 8. Since EHT already support up to 8ss, we may safely assume that the max Nss for EQM is 8. If there is any objection, we may run a SP/motion to finalize it. Suggest to change "TBD" to 8. | Refer to the comment. | Revised  Agree with the commenter. Update the TBD to 8.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 1150 | Dong Guk Lim | 38.3.11 | 134.03 | UHR supports upto 8 spatial streams. So. TBD is replaced with 8. | As the comment. | Revised  TGbn Editor: The same resolution as for CID66 |
| 1585 | Jinsoo Choi | 38.3.11 | 134.03 | Suggest not to restrict maximum spatial streams for 11bn UEQM. | Replace TBD as 8. | Revised  TGbn Editor: The same resolution as for CID66 |
| 2276 | Yan Zhang | 38.3.11 | 134.03 | "UHR defines equal modulation (EQM) for 1 to TBD spatial streams", change TBD to 8 based on UHR-SIG user info field contents for EQM. | As in comment | Revised  TGbn Editor: The same resolution as for CID66 |

*TGbn Editor: Please make the following change in P143L1 in Section 38.3.11 of D0.2.*

UHR defines equal modulation (EQM) for 1 to 8 (#66)(#1150)(#1585)(#2276) spatial streams, and UEQM for 2 to 4 spatial streams.

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| 67 | Jialing Li | 38.3.11 | 134.25 | Per motion #199, BSPK is not used in UEQM. Remove the sentence of "Inclusion of BSPK is TBD." In the previous sentence, it is clear that BSPK is not used. | Refer to the comment. | Revised  Agree with the commenter. Remove the TBD sentence.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 309 | Sigurd Schelstraete | 38.3.11 | 134.25 | "Inclusion of BPSK is TBD.". Update to reflect latest agreements | See comment | Revised  The same resolution as for CID67 |
| 1089 | Kanke Wu | 38.3.11 | 134.25 | "Inclusion of BPSK is TBD", UEQM does not apply to BPSK, this sentence should be removed | Remove sentence | Revised  TGbn Editor: The same resolution as for CID67 |
| 1151 | Dong Guk Lim | 38.3.11 | 134.25 | BPSK is excluded by motion 199. So, delete the following sentence "Inclusion of BPSK is TBD." | As the comment. | Revised  TGbn Editor: The same resolution as for CID67 |
| 1342 | Juan Fang | 38.3.11 | 134.25 | remove "Inclusion of BPSK is TBD" following passed motion #199 in 11-25-0014-03-00bn-tgbn-motions-list-part-2 | see comment | Revised  The same resolution as for CID67 |
| 1586 | Jinsoo Choi | 38.3.11 | 134.25 | Exclusion of BPSK on UEQM was agreed. | Remove the sentence "Inclusion of BPSK is TBD." | Revised  TGbn Editor: The same resolution as for CID67 |
| 2067 | Bo Sun | 38.3.11 | 134.25 | According to Motion 199 (PHY), BPSK is excluded from UHR UEQM. | Remove the last sentence. | Revised  TGbn Editor: The same resolution as for CID67 |
| 2278 | Yan Zhang | 38.3.11 | 134.25 | "Inclusion of BPSK is TBD." should be removed. In passed PHY motion 199, it states that "Exclude BPSK in UHR UEQM". | As in comment | Revised  TGbn Editor: The same resolution as for CID67 |

*TGbn Editor: Please make the following change in P143L25 in Section 38.3.11 of D0.2.*

UEQM is used only in a UHR MU PPDU with non-MU-MIMO beamformed transmission. UEQM is used only with LDPC. The combination of FEC coding rate and modulation order used in any spatial streams in UEQM transmission shall be a defined UHR-MCS. The allowed modulation levels used in UEQM are QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM and 4096-QAM. (#67) (#309) (#1089) (#1151) (#1342) (#1586) (#2067) (#2278)

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| 2277 | Yan Zhang | 38.3.11 | 134.29 | Change "in the non-MU-MIMO user field" to "in the user field for a non-MU-MIMO RU allocation" to be consistent with text in UHR-SIG. Change "MU-MIMO User field" to "User field for an MU-MIMO RU allocation" | As in comment | Agreed |
| 68 | Jialing Li | 38.3.11 | 134.32 | The last sentence of the paragraph, "For a UHR ELR PPDU, the UHR-MCS is carried in the ELR-SIG field." will be described in the next paragraph. Remove this sentence. | Refer to the comment. | Revised  Agree with the commenter. Streamline the wording of ELR MCS description.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 3505 | ron porat | 38.3.11 | 134.32 | language | Remove "For a UHR ELR PPDU, the UHR-MCS is carrier in the ELR-SIG field." as the next paragraph is already elaborating the ELR MCS in details. | Revised  TGbn Editor: The same resolution as for CID3505 |
| 3551 | ron porat | 38.3.11 | 134.35 | Needs an explicit mention that ELR is single spatial stream | The ELR modulation and coding scheme is carried in the MCS field of the ELR-SIG field in the UHR ELR PPDU and supports UHR-MCS 0 and UHR-MCS 1. | Revised  Agree with the commenter.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 932 | Wookbong Lee | 38.3.11 | 134.37 | Create 38.5.18 UHR-MCS for UHR ELR PPDU, and move table 38-14 and the description "The rate-dependent parameters for UHR-MCS 0 and UHR-MCS 1 for UHR ELR PPDU are defined in Table 38-14 (UHR ELR PPDU with UHR-MCS0 and UHR-MCS1)." to the section. | As in comment | Revised  Move the Table to subclause 38.5.  TGbn Editor: please make the changes as in 11-25/0846r0 |
| 2769 | Rong Zhang | 38.3.11 | 134.41 | Table 38-14 should be put in section 38.5 | see comments | Revised  TGbn Editor; The same resolution as for CID932 |
| 3243 | Yusuke Asai | 38.3.11 | 134.42 | The MCS table for UHR ELR PPDU should be in the subclause of "38.5 Parameters for UHR-MCSs." | Please add the subclause 38.5.18 and define the table there. | Revised  TGbn Editor: The same resolution as for CID932 |

*TGbn Editor: Please make the following change in P143L27 in Section 38.3.11 of D0.2.*

For a UHR MU PPDU, both the UHR-MCS and modulation pattern across spatial streams are carried per user in the non-MU-MIMO user field in the User Specific field of the UHR-SIG field; The MU-MIMO User field carries only the UHR-MCS per user in the User Specific field of the UHR-SIG field. For a UHR TB PPDU, the UHR-MCS is carried in the User Info field of the Trigger frame soliciting the UHR TB PPDU. For a UHR ELR PPDU, the UHR-MCS is carried in the ELR-SIG field.

(#68) (#3505)The UHR ELR PPDU supports UHR-MCS 0 and UHR-MCS 1, and single spatial stream only (#3551). Guard interval duration for the data field of a UHR ELR PPDU is *TGI2*,Data (1.6 μs). The rate-dependent parameters for UHR-MCS 0 and UHR-MCS 1 for UHR ELR PPDU are defined in Table 38-x1 (UHR ELR PPDU with UHR-MCS0 and UHR-MCS1, NSS=1).



**(#932)(#2769)(#3243)**

*TGbn Editor: Please insert a new sub-Section 38.5.18 into of D0.2.*

### 38.5.18 UHR-MCSs for UHR ELR PPDU (#932)(#2769)(#3243)

The rate-dependent parameters for UHR ELR PPDU MCS 0 and 1 are provided in Table 38-X1 (UHR ELR PPDU with UHR-MCS0 and UHR-MCS1, NSS = 1)

#### **Table 38-X1— UHR ELR PPDU with UHR-MCS0 and UHR-MCS1, NSS = 1**

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| **UHR-MCS index** | **Modulation** | **R** | **N*BPSCS*** | **N*SD*** | **N*CBPS*** | **N*DBPS*** | **Data rate (Mb/s)**  **1.6 µs GI** |
| 0 | BPSK | 1/2 | 1 | 48 | 48 | 24 | 1.67 |
| 1 | QPSK | 1/2 | 2 | 48 | 96 | 48 | 3.33 |