IEEE P802.11
Wireless LANs

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| Comment Resolution for Section 38.5 (Parameters for UHR-MCSs) |
| Date: 2025-05-10 |
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Abstract

This submission proposes resolution for the following 13 CIDs on Section 38.5 (Parameters for UHR-MCSs) in TGbn D0.1. All resolutions are based on TGbn D0.2.

* 359, 80, 378, 379, 1100, 1195, 1664, 2338, 81, 379, 358, 361, 3707

Revisons:

* r0: initial version

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| --- | --- | --- | --- | --- | --- | --- |
| **CID** |  | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 359 | Sigurd Schelstraete | 38.5 | 215.47 | incomplete sentence: what can be obtained? | Fix sentence | RevisedAdded NCBPS,u as the subject noun.TGbn Editor: please make the changes as in 11-25/855r0. |
| 80 | Jialing Li | 38.5 | 216.28 | Change " and TBD" to ", 17, 19, 20 and 23", per motion #195. | Refer to the comment. | RevisedAgree with the commenter. Update the TBDs in the resolution. TGbn Editor: please make the changes as in 11-25/855r0. |
| 378 | Jiyang Bai | 38.5 | 216.28 | "TBDs"should be replaced as "17,19, 20, 23" according to Motion 195 | As in comment. | RevisedTGbn Editor: The same resolution as for CID 80. |
| 379 | Jiyang Bai | 38.5 | 216.30 | "TBDs"should be replaced as" 16,18, 21, 22, 24-31" according to Motion 195 | As in comment. | RevisedTGbn Editor: The same resolution as for CID 80. |
| 1100 | Kanke Wu | 38.5 | 216.28 | TBDs can be replaced by "17, 19, 20, and 23" based on passed motion. Same applies to other locations where new MCS indices are used in this section. | See comment | RevisedTGbn Editor: The same resolution as for CID 80. |
| 1195 | Dong Guk Lim | 38.5 | 216.28 | Based on the passed Motion 195, Update TBDs and TBD in this text. | As the comment. | RevisedTGbn Editor: The same resolution as for CID 80. |
| 1664 | Jian Yu | 38.5 | 216.28 | Define TBDs for MCS | as in comment | RevisedTGbn Editor: The same resolution as for CID 80. |
| 2338 | Yan Zhang | 38.5 | 216.28 | Replace TBDs with MCS17, 19, 20 and 23, and change TBDs in Table 38-50 to 38-65. | As in comment | RevisedTGbn Editor: The same resolution as for CID 80. |
| 81 | Jialing Li | 38.5 | 216.30 | Change "TBD" to "16, 18, 21-22, 24-31", per motion #195. | Refer to the comment. | RevisedAgree with the commenter. TBD is replaced with MCS indices.TGbn Editor: please make the changes as in 11-25/855r0 |
| 379 | Jiyang Bai | 38.5 | 216.30 | "TBDs"should be replaced as" 16,18, 21, 22, 24-31" according to Motion 195 | As in comment. | RevisedTGbn Editor: The same resolution as for CID 81. |

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| **CID** |  | **Clause** | **Page.Line** | **Comment** | **Proposed Change** | **Resolution** |
| 358 | Sigurd Schelstraete | 38.5 | 215.39 | Do we need UHR DUP mode, or can people just use EHT DUP mode? New MCS, LDPC, ... probably don't apply anyway, so there's little that distinguishes UHR DUP from EHT DUP. | Remove UHR DUP mode from 802.11bn | RevisedAgree with the comment in the high-level. EHT MCS 14 serves the same purpose of UHR MCS14, and only used for PSD limited channel. Easy for rate adaptation to switch.UHR MCS15 for data field provides some sensitivity benefits, especially long packets. Good to keep the definition. MCS15 in UHR-SIG is not beneficial, as no preamble power boost is defined for non-ELR PPDU. The resolution is to remove MCS14 in UHR data field and MCS15 in UHR-SIG from 11bn D0.2. TGbn Editor: please make the changes as in 11-25/855r0 |
| 361 | Sigurd Schelstraete | 38.5 | 216.25 | Do we need UHR-MCS 14 and 15? They appear to be largely identical to EHT-MCS14 and EHT-MCS15. | Don't define UHR MCS14 and UHR MCS15 | RevisedTGbn Editor: same resolution as to CID358.   |
| 3707 | Youhan Kim | 38.5.17 | 233.01 | There is no definition of UHR DUP mode. Presumably, this is the same as EHT DUP except that the PH Version in U-SIG is set to 1 (UHR).If an UHR STA wishes to use a 'DUP' mode, then it can use EHT DUP. Hence, there is no need to replicate the same feature in UHR. | Remove UHR DUP. | RevisedTGbn Editor: same resolution as to CID358 |

*TGbn Editor: Please make the following change in P226L26 in subclause 38.5 of D0.2.*

38.5 Parameters for UHR-MCSs

The rate-dependent parameters for various RU or MRU sizes using  are provided in Table38-51 (UHR-MCSs for 26-tone RU, NSS,u = 1) through Table38-66 (UHR-MCSs for 4¡Á996-tone RU, NSS,u = 1). (#358) (#361) (#3707)

*TGbn Editor: Please make the following change in P226L36 in subclause 38.5 of D0.2.*

For UEQM transmission, NCBPS,u (#359) for a given UEQM pattern {s-*Δm*} in m-th spatial stream using *NSS*, *u* (>1) can be obtained using Equation (38-56).

*TGbn Editor: Please make the following change in P227L16 in subclause 38.5 of D0.2.*

UHR-MCSs 0–13, 15, 17, 19, 20 and 23 (#80) (#378) (#379) (#1100) (#1195) (#1664) (#2338) (#81) (#379) are defined for user u in SU transmission or MU transmission. UHR-MCSs 14, 16, 18, 21, 22, 24-31 (#81)(#379) are not defined.

*TGbn Editor: Please remove subclause 38.5.17 (UHR MCS 14 for UHR DUP mode) from D0.2.*

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 (#358) (#361) (#3707)

*TGbn Editor: Please make the following changes to subclause 38.5.18 (Parameters for UHR-SIG MCSs) of D0.2*

### 38.5.18 Parameters for UHR-SIG MCSs

The UHR-SIG MCSs, defined in [Table 36-X21 (UHR-SIG MCSs)](#_bookmark366), are used for the UHR-SIG field transmission in the UHR MU PPDU.

#### **Table 38-68—UHR-SIG MCSs**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Value of the UHR-SIG****MCS field** | **UHR-MCS****index** | **Modulation** | ***R*** | ***NBPSCS*** | ***NSD*** | ***NCBPS*** | ***NDBPS*** | **UHR-SIG****rate (Mb/s)** |
| 0 | UHR-MCS 0 | BPSK | 1/2 | 1 | 52 | 52 | 26 | 6.5 |
| 1 | UHR-MCS 1 | QPSK | 1/2 | 2 | 52 | 104 | 52 | 13 |
| 2 | UHR-MCS 3 | 16-QAM | 1/2 | 4 | 52 | 208 | 104 | 26.0 |
|  |  |  |  |  |  |  |  |  |
| NOTE—The parameters *NSD* , *NCBPS* , and *NDBPS* are used for the UHR-SIG field transmission in each 20 MHz subchannel. |

(#358) (#361) (#3707)

*TGbn Editor: Please make the following changes in subclause 38.3.10.12.1 in D0.2.*

38.3.10.12 Construction of Data field in a UHR PPDU

38.3.10.12.1 non-ELR PPDU

Construct the Data field as defined in 38.3.16 (Data field) with the following highlights:

For each user,

* Construct the SERVICE field as described in 38.x (SERVICE field) and append the PSDU to the SERVICE field.
* Pre-FEC padding: Append the pre-FEC padding bits as described in 38.3.16 (Data field). If the user is using BCC, then add tail bits.
* Scrambler: Scramble the pre-FEC padded data as described in 38.x (UHR PHY DATA scrambler and descrambler).
* Encoder: If the user is using BCC, then BCC encode and, if UHR-MCS 15 is used in a 106-tone RU, 242-tone RU, or 106+26-tone MRU, insert a padding bit after every  coded bits as described in 38.3.16.1.2 (BCC coding). If the user is using LDPC, then LDPC encode as described in 38.3.16.1.3 (LDPC coding).
* Post-FEC padding: Append the post-FEC padded bits as described in 38.3.16 (Data field) and the PE field as described in 38.3.17 (Packet extension).
* Stream parser: Rearrange the output of encoder into blocks as described in 38.3.16.2 (Stream parser).
* Segment parser: In a 2´996-tone RU, 4´996-tone RU, 996+484-tone MRU, 996+484+242-tone MRU, 2´996+484-tone MRU, 3´996-tone MRU, or 3´996+484-tone MRU using UHR-MCS 0 to 13 or 15, divide each spatial stream output from the stream parser into multiple frequency subblocks as described in 38.3.16.6 (Segment deparser). This block is bypassed for RU(s) or MRU(s) of other sizes when using UHR-MCS 0 to 13 or 15. (#358) (#361) (#3707)
* BCC interleaver: If the user is using BCC, interleave as described in 38.3.16.4 (BCC interleavers). This block is bypassed if the user is using LDPC.
* Constellation mapper: Map to BPSK, BPSK-DCM, QPSK, 16-QAM, 64-QAM, 256-QAM, 1024-QAM, or 4096-QAM constellation points as described in 38.x (Constellation mapping).
* LDPC tone mapper: If the user is using LDPC, the LDPC tone mapping is performed on all LDPC encoded streams as described in 38.3.16.5 (LDPC tone mapper). This block is bypassed if the user is using BCC.
* Segment deparser: In a 2´996-tone RU, 4´996-tone RU, 996+484-tone MRU, 996+484+242-tone MRU, 2´996+484-tone MRU, 3´996-tone MRU, or 3´996+484-tone MRU using UHR-MCS 0 to 13 or 15, merge the multiple 80 MHz frequency subblocks into one frequency segment as described in 38.3.16.6 (Segment deparser). This block is bypassed for RU(s) or MRU(s) of other sizes when using UHR-MCS 0 to 13 or 15.
* (#358) (#361) (#3707)Pilot insertion: Insert pilots following the steps described in 38.3.16.8 (Pilot subcarriers).
* CSD: Apply CSD for each spatial stream as described in 38.3.15.2.2 (Cyclic shift for UHR modulated fields).

*TGbn Editor: Please make the following changes in subclause 38.3.15.7.2 in D0.2.*

38.3.15.7 U-SIG

**38.3.15.7.2 Content**

**Table 38-19 U-SIG field of a UHR MU PPDU (*continued*)**

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| --- | --- | --- | --- | --- |
| **Two parts of U-SIG** | **Bit** | **Field** | **Number of bits** | **Description** |
| U-SIG-2or  | **…** | **…** | **…** | **…** |
| B9-B10 | UHR-SIG MCS | 2 | Indicates the MCS used for modulating the UHR-SIG field.Set to 0 for UHR-MCS 0. Set to 1 for UHR-MCS 1. Set to 2 for UHR-MCS 3. Value 3 is Validate. (#358) (#361) (#3707) |
| … | … | … | … |

38.3.15.9.6 User Specific field

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| * User field format for a non-MU-MIMO allocation
 |
| Bit | Subfield | Number of bits | Description |
| B0–B10 | STA-ID | 11 | Set to a value of the TXVECTOR parameter STA-ID (see 37.z (TBD) (STA\_ID)). |
| B11–B15 | MCS | 4 | If the STA-ID subfield is not equal to 2046, this subfield indicates the following modulation and coding scheme: Set to *n* for UHR-MCS *n*, where  *n*=0, 1, …, 13, 15, 17, 19, 20 and 23. (#358) (#361) (#3707)Other values are Validate.Set to an arbitrary value if the STA-ID subfield is equal to 2046.If the UL/DL subfield of the U-SIG field is set to 0:If the value of STA-ID subfield matches the user’s STA-ID, the value of (#358) (#361) (#3707)UHR-MCS 15 is Validate if the condition described in 38.1.1 (Introduction to the UHR PHY) is not met.If the value of STA-ID subfield does not match the user’s STA-ID, all values are Disregard.If the UL/DL subfield of the U-SIG field is set to 1, the value of (#358) (#361) (#3707)UHR-MCS 15 is Validate if the condition described in 38.1.1 (Introduction to the UHR PHY) is not met. |
| … | … | … | … |

*TGbn Editor: Please make the following changes in subclause 38.3.25.2 in D0.2.*

38.3.25.2 Receiver minimum input sensitivity

The PER shall be less than 10% for a PSDU with the rate-dependent input levels listed in Table38-47 (Receiver minimum input level sensitivity) and Table38-48 (Receiver minimum input level sensitivityfor ELR). The PSDU length shall be 2048 octets for (#358) (#361) (#3707)UHR-MCS 15, ELR-MCS0 or ELR-MCS1 or 4096 octets for all other modulations.

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| * Receiver minimum input level sensitivity
 |
| Modulation | Rate (*R*) | Minimum sensitivity (20 MHz PPDU) (dBm) | Minimum sensitivity (40 MHz PPDU) (dBm) | Minimum sensitivity (80 MHz PPDU) (dBm) | Minimum sensitivity (160 MHz PPDU) (dBm) | Minimum sensitivity (320 MHz PPDU) (dBm) |
|
| … | … | … | … | … | … | … |
| 4096-QAM | 3/4 | –49 | –46 | –43 | –40 | –37 |
| 4096-QAM | 5/6 | –46 | –43 | –40 | –37  | –34 |
| BPSK-DCM (UHR-MCS 15) | 1/2 | –82 | –79 | –76 | –73 | –70 |
|  |  |  |  |  |  |  |
| NOTE—N/A = not supported by the PPDU format. |

(#358) (#361) (#3707)

*TGbn Editor: Please make the following changes in subclause 38.3.25.3 in D0.2.*

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| * 38.3.25.3 Adjacent channel rejectionMinimum required adjacent and nonadjacent channel rejection levels
 |
| Modulation | Rate (*R*) | Adjacent channel rejection (dB) | Nonadjacent channel rejection (dB) |
| 20/40/80/160/320 MHz channel | 20/40/80/160/320 MHz channel |
| … | … | … | … |
| 4096-QAM | 3/4 | –17 | –1 |
| 4096-QAM | 5/6 | –20 | –4 |
| BPSK-DCM (UHR-MCS 15) | 1/2 | 16 | 32 |
|  |  |  |  |

(#358) (#361) (#3707)